GENERAL CATALOGUE 2009

UPS from 350VA to 800kVA

AROS

THE SCIENCE OF CONTINUITY

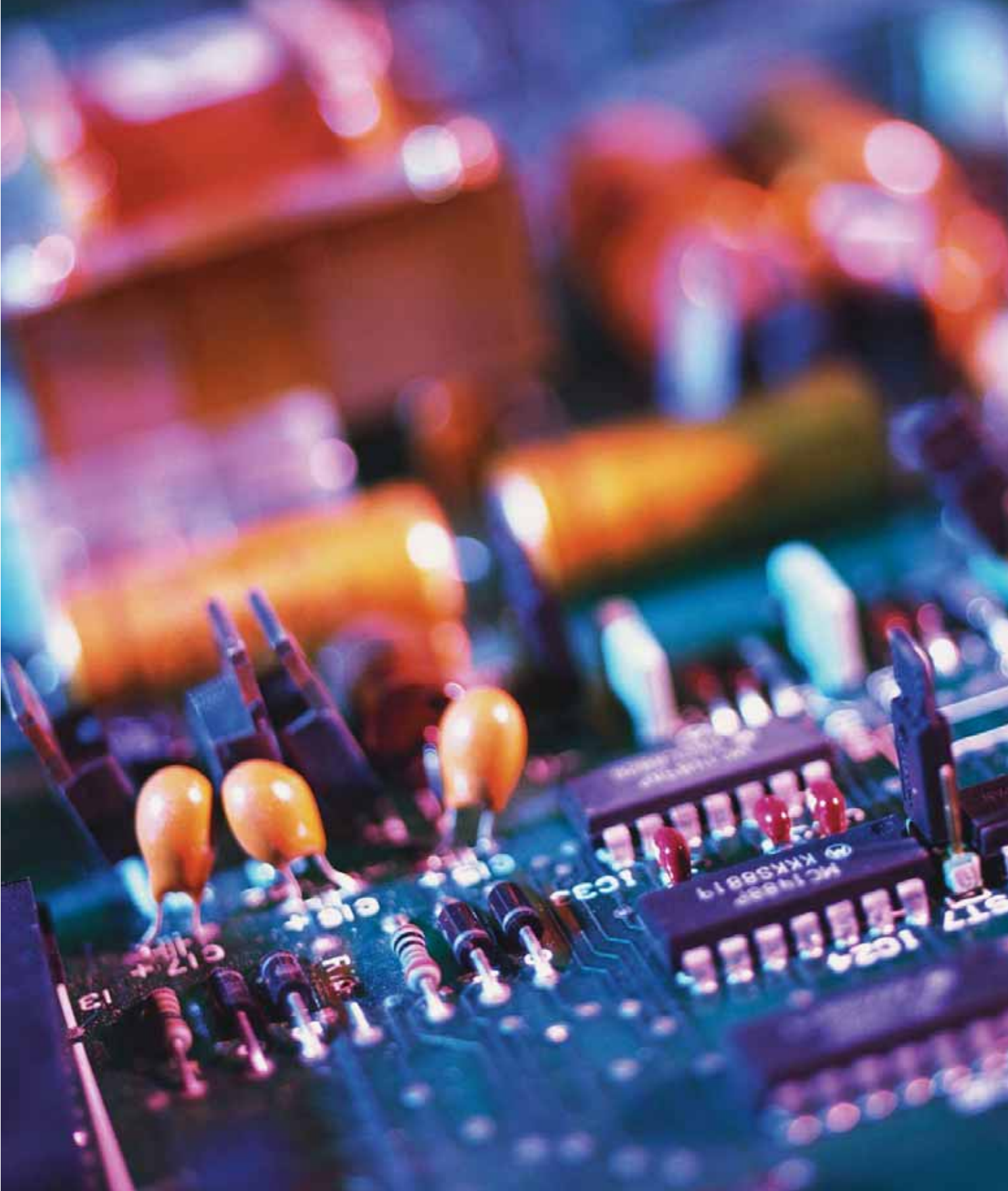
AROS, a history of research and continuity.

Continuous operation is the key word for AROS. It is its field of activity, a sophisticated technology upon which the efficiency of every electrical system depends. AROS has over 70 years of experience in this highly specialized sector and is currently a leading brand name in the field.
But continuity is also AROS "trademark" as acknowledged by design and installation engineers: the will to strive constantly to achieve the highest production standards and to anticipate market demands. Thinking in this way brought AROS to set up the Research and Development team of about forty persons to better respond to the market requirements. The result is that today whoever thinks about emergency power supplies thinks AROS.

AROS was set up in 1935 and after just a few years established itself as the leading Italian manufacturer of voltage regulators, transformers and power supplies. In the fifties AROS was the first company manufacturer in Italy of ballasts for fluorescent neon lamps and became the Italian leader in the field of components for lighting. In the eighties it designed, developed and produced switching power supplies for IBM computers. AROS thus acquired know-how in PWM (Pulse-Width- Modulation) technology that enabled it to enter the UPS sector. This is now the most important field of activity for AROS, which has maintained its leadership in voltage regulators and components.

Steps to success

1935	Manufacture of radio loudspeakers
1940	Production of transformers for radios and electrical power supplies
1945	Entry on the market of the first power supplies (ballasts) for fluorescent neon lamps
1950-1959	Manufacture of magnetic reactors for fluorescent and discharge lamps
1960-1969	First suppliers of components for IBM Manufacture of ferro-resonant regulators
1970-1979	Production of electronic components for regulators
1980-1989	Manufacture of uninterruptible power supplies (UPS), switching power supplies and electronic reactors
1990-1999	Expansion of the range of UPS for various applications (IT, industrial)
2000-2008	Growth and consolidation in the Worldwide UPS market
2009	Expansion of its production with the STS (automatic Static Transfer Switch)



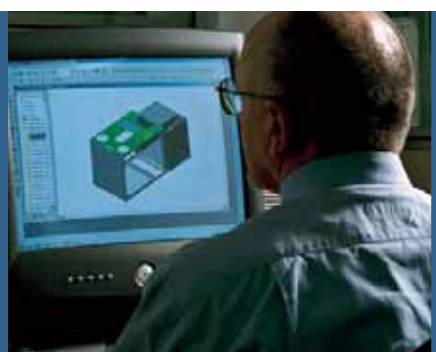
Entering the Research and Development department is like entering the heart of AROS. Here users' real problems are "filtered" by means of the latest technologies and transformed into successful products.

Research

Highly trained personnel and state of the art technologies lie behind every project.

Entering the Research and Development department means entering the heart of AROS. Here users' real problems are "filtered" by means of the latest technologies and transformed into successful products. Environmental simulators, sophisticated analysis tools, CAD systems: super specialized devices for super specialized design engineers to predict tomorrow's needs today, needs arising from developments in electronics and market trends. AROS dedicates its greatest resources to this team and has recently boosted the power area. This both consolidates the strength of its core business of Uninterruptible Power Supplies (UPS), components and voltage regulators, while mapping out its future course.

To understand the work carried out by the research team, just think of the technological "nodes" that are hidden behind the apparent functional linearity of a UPS system. To provide a high level of efficiency, withstand strong line interference, interact with surrounding systems that may not be homogeneous, comply with complex international safety standards, minimize the level of interference emitted towards the mains and towards the environment and finally, offer a degree of reliability that is increasingly demanded by new electronic systems.

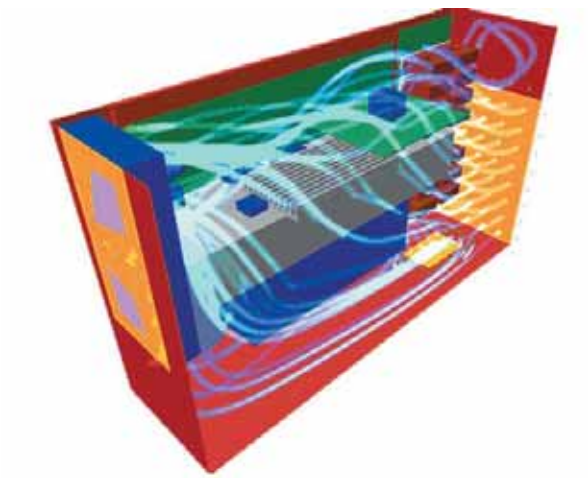


AROS products are intended for sophisticated devices - delicate electronic systems needing protection - and sophisticated devices are required to design, develop and produce them.

New technology

Intelligent devices.
Intelligent men.

AROS products are intended for sophisticated devices - delicate electronic systems needing protection - and sophisticated devices are required to design, develop and produce them. AROS Research Centre is at the cutting edge when it comes to the synthesis and analysis of cooling systems through the use of software for thermal analysis based on computational fluid dynamics and infrared cameras. This is just one example of how AROS engineers and technicians use state of the art computer-aided technologies to make AROS solutions increasingly competitive, not only in terms of performance and respect for the environment, but also as regards reducing operational costs.



AROS uses thermal analysis to study how the cooling properties inside a device change by modifying parameters such as the size and footprint of heat dissipators, the type and position of the fans, deflectors and ventilation grids, and by eliminating the critical areas (caused by the recirculation or stagnation of air at high temperatures within the UPS). All this to achieve uniform ventilation, significantly increasing the safety and performance of the system while retaining its compact size.

Quality not only as an objective but also as an indispensable condition for every product: this is AROS.

Quality

Millions of users believe in AROS because AROS believes in excellence.

Quality not only as an objective but also as an indispensable condition for every product: this is the creed that AROS abides by and which is centred around the certification of its quality system. AROS is certified UNI EN ISO 9001:2000 for the design and development, manufacture, sales and after-sales service of its products. This certification guarantees stringent and constant control of its corporate processes. The result is not just higher product quality and reliability but also a philosophy focused on understanding customers' present and future requirements, complying with their requests and aiming to exceed their expectations.

With so much trade taking place across borders, conformity assessment has become an important component of the world economy.
Before they are put on the market, all AROS products are subjected to testing for conformance with specifications complying with ISO 9001:2000 standards.

For AROS, a product is not technologically complete unless it "incorporates" a level of support that resolves users' problems.

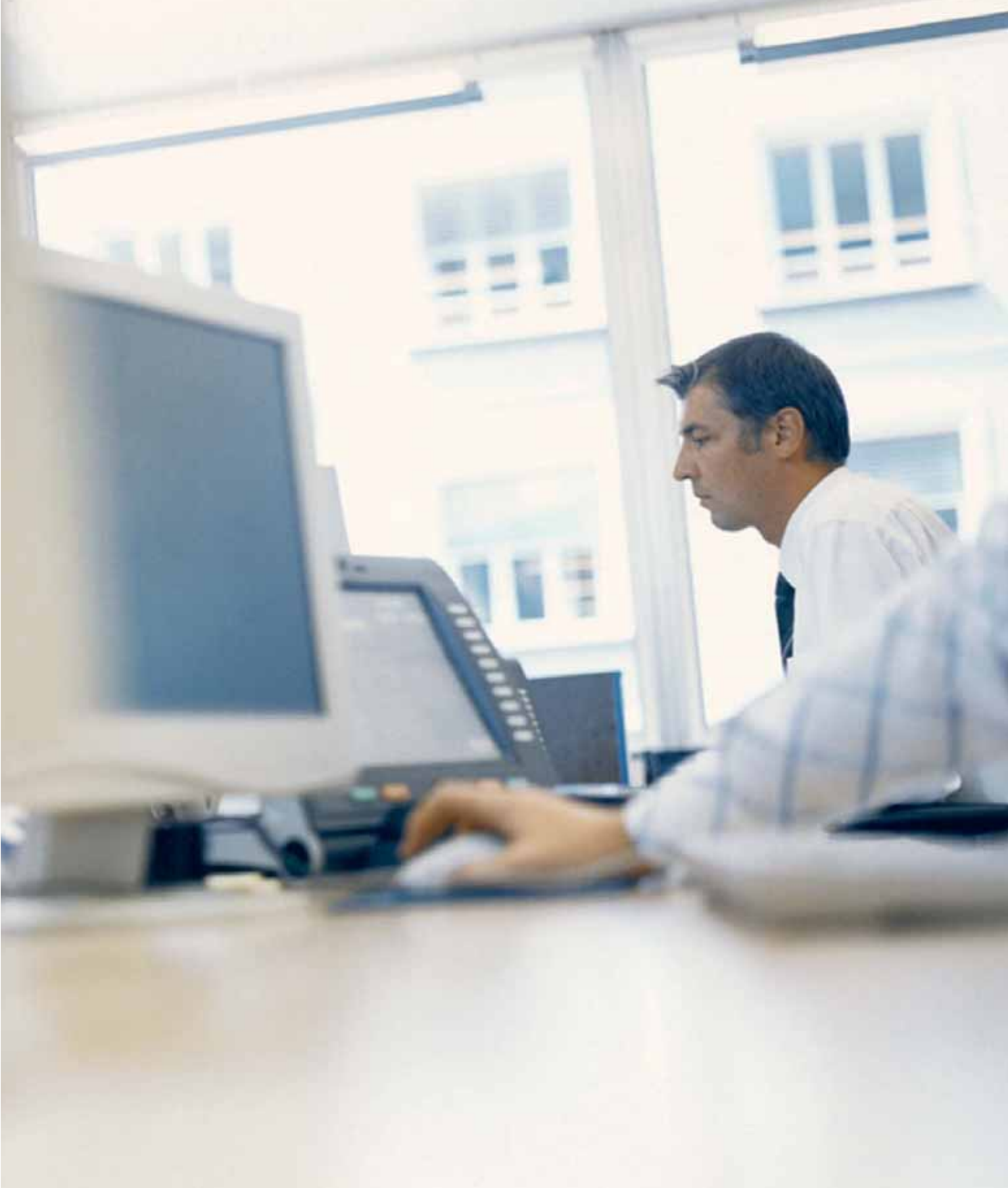
Service

The service rendered to customers every day makes AROS a partner.

For AROS, a product is not technologically complete unless it "incorporates" a level of support that resolves users' problems. High resolution capacity, low intervention times: this formula has been one of the keys to its success on the domestic and worldwide markets. A formula that finds concrete application in services such as PowerNetGuard, the remote support service that remotely manages and controls the UPS 24 hours a day. Choosing AROS means being able to connect on-line with the Control centre, being informed in real time on the status of the UPS and obtaining immediate action in emergencies. AROS combines this advanced service for its users with training activities for technical and commercial operators, on its own premises or at the customer's site.

With a highly trained team, UPService provides a reliable and technical support and after-sales service.

UPS service



The purpose of our ATI personnel is to give advice on the relevant standards affecting AROS UPS, installations, batteries and applications.

AROS Technical Information (ATI)

AROS offers the on-line pre-sales support to distributors, installers, consultants and end customers providing information on:

- Standard products - giving detailed technical specifications and helping its customer to choose the right configuration using the Aros software package;
- Applications - providing assistance in choosing the right products;
- Customer solutions - supplying non standard products designed to match the customer specifications;
- Batteries - guiding the users to choose the right battery type and configuration;
- Installations - furnishing detailed drawings and solving any doubt about the installation;
- Standards - offering consultancy on standards applicable to its product range;
- Training - organizing sales training and products presentations to distributors or end customers.

ATI information is provided in form of technical specifications, installation manuals and software packages for UPS sizing.

REPLACE BATTERY
100
80
60
40
20
25
50
75
100
>100
AROS
AROS
AROS

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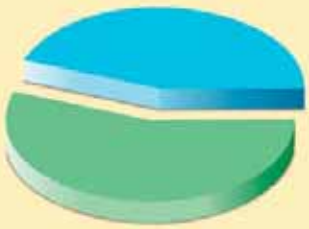
Power problems

BLACKOUT, VOLTAGE DISTURBANCES



Blackout, voltage disturbances 45%

Other 55%

Why an Uninterruptible Power Supply?

Data centres, servers, LAN nodes and telecommunication systems must always be protected against possible problems in the power supply. Sudden blackouts and variations in the mains supply may lead to system malfunctions and severe data losses. But even other electrical equipment can cause damage or inconvenience if there is a breakdown in the mains. Just think of the check-out systems in a supermarket, lighting systems and industrial production units, not to mention safety systems, pumping systems and automatic devices in general.

Power problems are caused by various sources such as distribution network faults, system switching, weather and environmental conditions, heavy equipment or simply just faulty maintenance.

The simplest and most effective way of coping with these disturbances is to install a UPS unit (UPS stands for Uninterruptible Power Supply). Acting as an interface between the mains and the loads, the UPS guarantees the continuity and the quality of the electrical power supplied to the loads, whatever the condition of the mains may be. In fact these systems stabilise the voltage perfectly, eliminating all disturbances.
They even supply voltage when the mains fails, by means of a series of batteries which give a back up time that is generally sufficient to guarantee the safety of persons and of the system.

In order to decide which type of appliance is able to guarantee the best level of protection, you must know the types of mains problems that can disturb your systems.

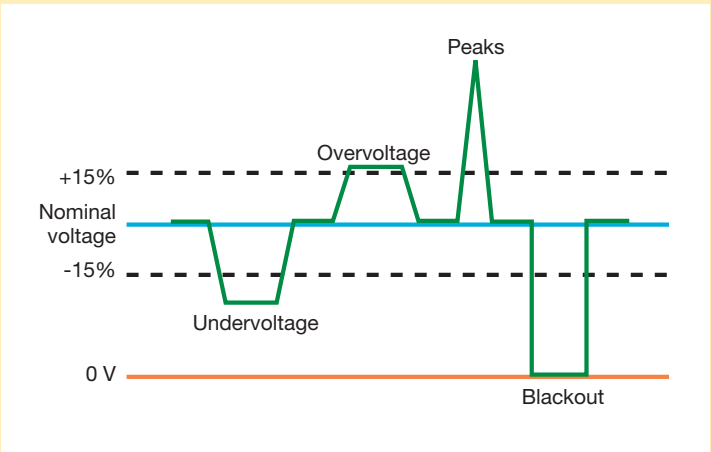
TYPE OF MAINS DISTURBANCES

Undervoltage 85%

Peaks 8%

Blackout 6%

Overvoltage 1%



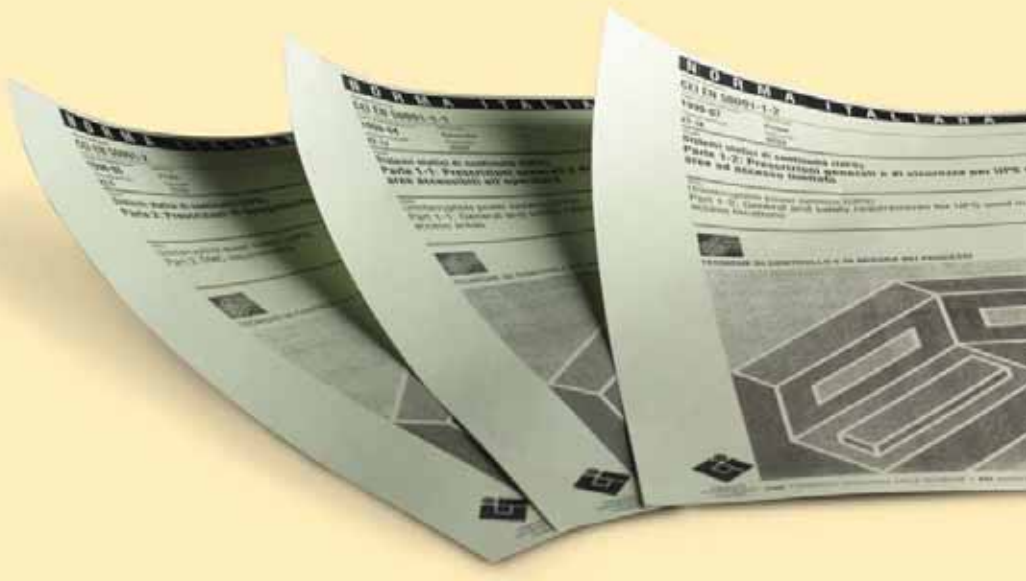
CEI, CENELEC and IEC are the recognized standardization bodies respectively at national, European and international level. Such standardization guarantees the compliance with CE Directives.

Technical Standards

Safety
EN 62040-1-1 is the reference standards regulating the basic safety requirements for UPS used in operator access areas.
EN 62040-1-2 is the reference standards regulating general and safety requirements for UPS used in restricted access locations.

Electromagnetic Compatibility
This is the capacity of equipment to work without being disturbed (immunity) and without disturbing (emission) other equipment due to electromagnetic disturbances on electric wires and irradiated.
EN 50091-2 and IEC 62040-2 are the reference standards which also defines the testing procedures.

Performances
The reference document is the Performance Requirements EN 62040-3. It is a guide for a better understanding between manufacturer and user since it defines which performance must be declared as well as the relevant testing methods.
All AROS UPS's have been designed and built in accordance with all the above standards and therefore bear the CE mark.



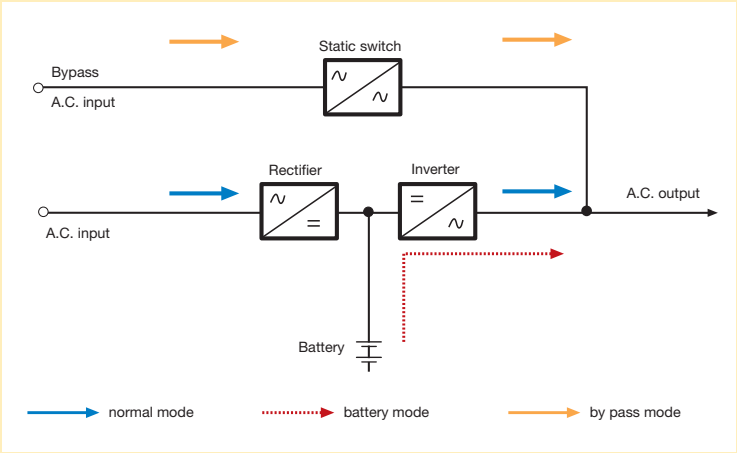
Types of Uninterruptible Power Supply (UPS)

On-Line Uninterruptible Power Supply (VFI)

On this type of UPS, also known as a double conversion UPS, the inverter draws its power continuously from the rectifier (converter). The current is completely regenerated by its transformation from AC to DC and back to AC, guaranteeing a constant level of quality, regardless of disturbance on the mains power source.

By carrying out continuous double conversion, an On-Line UPS significantly attenuates electrical noise, which might otherwise damage a computer. When the AC input supply is not within the voltage and frequency tolerances, the battery is used to power the inverter. The inverter continually supplies the critical load with a true sinewave current.

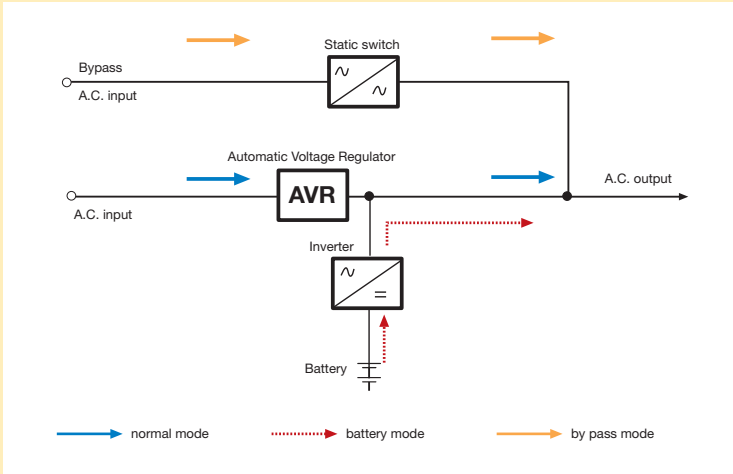
If a converter/inverter failure occurs, the continuity of the load power can be improved by activating the bypass source using a transfer switch.



Types of Uninterruptible Power Supply (UPS)

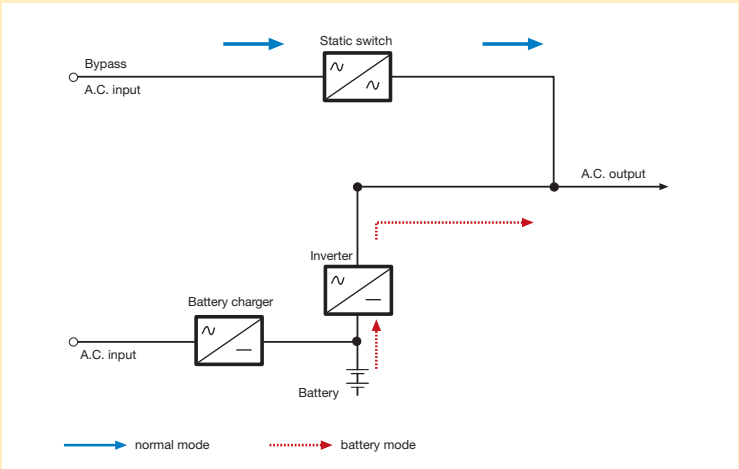
Line Interactive Uninterruptible Power Supply (VI)

On this type of UPS the inverter is connected in parallel to the AC input and also charges the battery (interactive operation in reversible mode).
When the AC input supply is not within strict amplitude and frequency tolerances, the load is powered by the inverter through the battery.
The normal inverter output waveform is a stepwave or squarewave.
This technique is rarely used for high power ratings as frequency regulation is not possible. Active Standby (or Line Interactive) technology is a recent development made possible by the advent of microprocessors. The UPS is fully controlled by a microprocessor which monitors the quality of the mains power supply and reacts to any variations. In the event of a power problem, the UPS transfers the load to the batteries to supply stabilised power. It is increasingly frequent to add a voltage compensation circuit, called a "booster", that is enabled in the event of prolonged voltage drops.



Passive Standby Uninterruptible Power Supply (Off-line) (VFD)

This type of UPS, also called Off-line UPS, is connected in parallel to the normal AC source. The current is filtered in order to attenuate the most frequent forms of disturbance. In the event of a power problem the UPS transfers the load to the batteries to supply stabilised power: the inverter only switches on when the mains fails or fluctuates outside the input voltage tolerances of the EMI filter or if it is fitted with Automatic Voltage Stabiliser (AVS).



Evaluation parameters

Apparent power (in VA or kVA)
It is defined as:

$P_{APP} = V \times I$
for single-phase load

$P_{APP} = V \times I \times \sqrt{3}$
for three-phase loads

where **V** is the load voltage supply and **I** is the current absorbed by the load in normal load conditions.
This information is normally shown on documents and/or load nameplates though it may be shown as an oversized value.

Active power (in W or kW)
It is defined as:

$kW = kVA \times \cos\varphi$
(where $\cos\varphi$ means power factor PF).

The $\cos\varphi$ value of loads is very seldom indicated, therefore a correct UPS sizing requires measurements of **kVA** absorbed by loads.
Experience, anyway, shows that typical loads of computer feature a PF between 0,65 and 0,8.

Considerations on the misleading concept of "computer power"
In the definition of the UPS rated power, the parameter values, defined as "computer power", "switching power", "actual power", power a particular temperature value, etc. are sometimes indicated.
Such arbitrary parameter values have no relation with apparent power and active power; they can be neither quantified nor defined and therefore must not be used for the correct sizing of the UPS.

Crest Factor
A linear load absorbs a sinewave current that shows an effective value (I_{EFF} usually measured and declared) and a peak value (I_{PK}). The Crest Factor value is defined as:

$$CF = \frac{I_{PK}}{I_{EFF}}$$

The nominal value for a linear load is CF = 1,41. Most loads applied to UPS's are non- linear load: they absorb distorted current with a CF value greater than 1,41 and require therefore higher peak currents thus resulting in an increased distortion of the output voltage than equivalent linear loads. Directive EN62040-3, indicates a typical non-linear load as CF=3, used for UPS testing, which may be used in the absence of other data.

Overload
Overloads are temporary requests from electrical equipment which exceed regular operation absorption. They are caused by current peaks which may occur when one or more users are switched on. In case the overload exceeds the admissible limits the UPS guarantees the energy supply via the automatic bypass line. For "On line" UPS's the transfer is effected without any break in power (transfer time = 0 ms). The "bypass" is a safety device with independent protection and auxiliary supply able to supply the load independently from the UPS also when the UPS is switched off or broken.

Input current harmonics
The UPS battery charger rectifier absorbs a distorted current containing harmonics that are multiples to the reference 50Hz frequency. These harmonics may cause voltage distortion which may affect the normal operation of non privileged user's.

The harmonics level of AROS UPS's complies with the present directive. Howerver, in order to further reduce the presence of these harmonics variuos solutions are available such as the installation of Active Filetrs (Power Factor Controlled) or different Rectifier designs.

Runtime
The batteries supplied with the UPS's are valve regulated batteries (VRLA) known as sealed batteries with no electrolyte top-up, very low gas emission, suitable for installations in offices and public places with no need for special precautions. Batteries are normally supplied with the UPS and can either be installed in the same cabinet or in additional ones. AROS guarantees the power supply runtimes specifying the apparent load power and the power factor.

Remarks about the misleading concept of "typycal autonomy"
In defing the runtime it is often used the concept "typical autonomy (or runtime)" which has nothing to do with the real runtime based on the 100% load value expressed in W or kW (active power). The runtime that AROS shows on all its documentation have been calculaterd at 100% of the load.

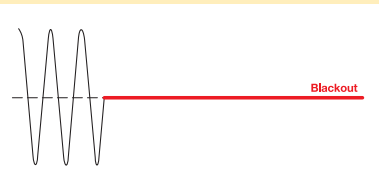
Power quality and mains disturbance

Electronic equipment functions properly as long as the utility is available and with high quality. Unfortunately not always this is possible because most of the power quality events are caused by factors beyond the control of the Distribution Company. These factors may occur either externally (in the network distribution system) or internally (in the facility when the system is located). External causes may be for example storm, lightning, high wind, tree limb contact, construction activities etc, while the internal causes may be switching of the machine, capacitor banks, fault or maintenance activities.

Depending on the events the power quality disturbances may vary in type, duration and intensity.

Typical power supply disturbances that cause major bad effects on your load are listen below.

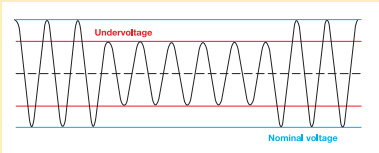
Power outage
Power interruption for a time of more than 3s is called an outage or commonly "blackout". This is normally caused by atmospheric accidents to the high voltage distribution network or a failure in the power supply equipment.



Blackout

Consequences:
- **Computer applications**
  Complete system shutdown with loss of data, possible hardware damage and long periods of employee inactivity.
- **Industrial applications**
  Huge impact in the production activity with consequent production loss and/or unexpected safety consequence.

Undervoltage
It is a voltage reduction in amplitude for a time between 10 ms to 1 s. expressed as a percentage from 10 and 100% of the rated voltage. This is caused for example by short circuits in the resident distribution systems or the large inrush current of the transformers.

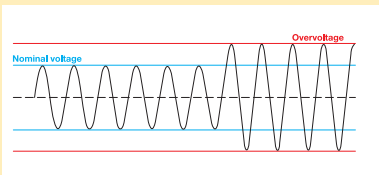


Undervoltage

Consequences:
- **Computer applications**
  Overheating of the electronic components with consequent operational breakdown.

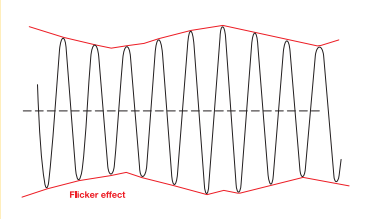
- **Industrial applications**
  Instability of asynchronous motors and loss of synchronization of synchronous motors, opening of contactors (voltage drop > 30%), power-off discharge lamps (voltage drop > 50% for 20-40 ms) with subsequent return of power after several minutes and consequent operational breakdown.

Overvoltages
Overvoltage is an increase in voltage for a time of more than 10 ms. Overvoltages may be caused by the disconnection of major loads (interruption in manufacturing processes of industrial companies, reduction in the speed of electric motors, arc furnaces, rolling mills, etc.) or natural events such as lightning.



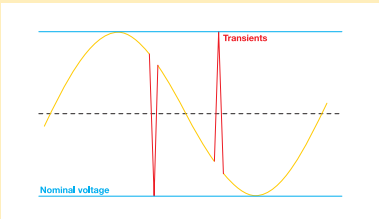
Consequences:
Faults in all electric/electronic equipment (100%<overvoltage<150%); e.g. damage to boards, power supplies, computers/servers, faults in lighting systems, etc.

Sag and Swell
Any short term voltage decrease (sags) or increase (swell) for a time from half cycle to 3 seconds. It is normally caused by the equipment shutdown, circuit breaker operations, high peak current absorbed by the equipments, or short-circuit.



Consequences:
The major effects may be the loss of data or the lights flicker, very unpleasant for the people exposed to these effects.

Transients
Transients are rapid, very high overvoltages of up to 20 kV. They are caused mainly by lightning (which is random in its location, duration and amplitude) but also by faults on the high-voltage network, the switching of inductive loads or the powering of highly capacitive loads.



Consequences:
Transients destroy inadequately protected equipment (melting of wires, perforation of isolation in motors, badly-timed release of protection devices, etc.).

UPS range summary

	RAPIDO	ALFA/ALFA PLUS	PC PLANET	SYNCRO	SPRING	SENTINEL 6
Power Rating	350-550VA	400-600-800VA 400-600-800 1100-1600VA	400-600-800VA	800-1000-1500 2000VA	500-800 1100-1500 2200-3000VA	700-1000-1500 2000-3000VA
Topology	Line Interactive	Line Interactive	Line Interactive	Line Interactive	Line Interactive	On line Double conversion
Input Voltage	230V single-phase	230V single-phase	230V single-phase	230V single-phase	230V single-phase	230V single-phase
Output Voltage	230V single-phase	230V single-phase	230V single-phase	230V single-phase	230V single-phase	230V single-phase
Inveter Output transformer	–	–	–	–	–	–
Automatic bypass	–	–	–	–	–	●
Maintenace Internal bypass	–	–	–	–	–	–
Battery test	–	–	●	●	●	●
Deep Battery Discharge protection	–	●	●	●	●	●
ECO mode operation	–	–	–	–	–	–
SMART ACTIVE operation	–	–	–	–	–	–
STAND BY - OFF (Emergency ligthing - EN 50171)	–	–	–	–	–	–
Frequency Converter	–	–	–	–	–	●(2)
Multimodule Configuration	–	–	–	–	–	–
Input Harmonic Filter	–	–	–	–	–	–
Backfeed protection	●	●	●	●	●	●
Base Monitoring Software (Watch&Save 3000)	downloading from internet	downloading from internet	● (no mod. 400)	●	●	●
RS 232 port	–	–	● (no mod. 400)	●	●	●
USB port	●	● (only Plus version)	–	–	●	–
Dry Contact	–	–	●(1)	●(1)	●(1)	❍(1)
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● Standard
❍ Optional

(1) Available only when the RS 232 port is not used for other functions
(2) Available on option and facturing set
(3) Only 6,5-8-10kVA
(4) Only 3Ph input

SENTINEL XR	SENTINEL XR PLUS	FLEXUS	SENTRY MULTISTANDARD 3/3	SENTRY HPS 3/1	SENTRY HPS 3/3	SENTRY MPS	SENTRY MPS-HP
3300-4000 5000-6000-6500[4] 8000-10000VA	5-6-6,5-8-10kVA	10-12-15-20kVA (1Ph) 10-12-15-20 30-40kVA (3Ph) 100-120kVA (3Ph)	60-80kVA	8-10-15-20-30-40 60-80-100kVA	10-15-20-30-40 60-80kVA	30-40-60-80 (1Ph) 100-120-160-200 250-300-400-500 600-800kVA (3Ph)	100-120-160-200-250kVA
On line Double conversion	On line Double conversion	On line Double conversion	On line Double conversion	On line Double conversion	On line Double conversion	On line Double conversion	On line Double conversion
230V single-phase 400V three-phase[3]	230V single-phase 400V three-phase[3]	230V single-phase (5) 400V three-phase (6)	400V three-phase	400V three-phase	400V three-phase	400V three-phase	400V three-phase
230V single-phase	230V single-phase	230V single-phase (5) 400V three-phase (6)	400V three-phase	230V single-phase	400V three-phase	230V single-phase[7] 400V three-phase[8]	400V three-phase
–	–	on option	–	●	●	●	●
●	●	●	●	●	●	●	●
–	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	only from 30 to 100kVA	–	●	●
●	●	●	●	–	–	●	●
●	●	●	●	–	–	●	●
●	●	●	●	●	●	●	●
–	–	❍	❍	❍	❍	❍	❍
–	–	not required	Active Filter	❍	❍	–	not required
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●
●	❍	●	–	–	–	–	–
●[1]	●	●	●	●	●	●	●
pag. 42	**pag. 48**	**pag. 52**	**pag. 60**	**pag. 66**	**pag. 66**	**pag. 72**	**pag. 78**

● Standard
❍ Optional

(5) From 10 to 20kVA
(6) From 10 to 40kVA

(7) Only 30-40-60-80kVA
(8) From 100kVA above

UPS options

	RAPIDO	ALFA/ALFA PLUS	PC PLANET (except PC-Planet 400)	SYNCRO	SPRING
SOFTWARE PACKAGES					
Watch&Save 3000 (Professional Version)			▲	▲	▲
PowerNetGuard			▲	▲	▲
COMMUNICATION OPTIONS					
NetMan 101 Plus - Box (TCP/IP, SNMP, HTTP)			▲	▲	▲
NetMan 102 Plus - Slot (TCP/IP, SNMP, HTTP)					▲
MultiCom 301 - Box (MODBUS/JBUS)			▲	▲	▲
MultiCom 302 - Slot (MODBUS/JBUS)					▲
MultiCom 351 - Box (serial duplexer)			▲	▲	▲
MultiCom 352 - Slot (serial duplexer)					▲
MultiCom 362 (RS232 + USB)					▲
MultiCom 372 (additional RS232 port and EPO)					▲
MultiCom 382 (Dry contact extension + EPO)					▲
MultiCom 401 (PROFIBUS)			▲	▲	▲
Multi I/O			▲	▲	▲
USB converter			▲	▲	
AS/400 Interface			▲	▲	▲
OTHER OPTIONS					
External Battery temperature sensor					
Display Remote Monitor panel					
Maintenance Bypass cabinet				▲	▲
IRMS	▲	▲	▲	▲	▲
Input isolation transformer	on request	on request	on request	on request	on request
Graphic Remote Panel			▲	▲	▲

▲ Option available

SENTINEL 6	SENTINEL XR	SENTINEL XR PLUS	FLEXUS	SENTRY MULTISTANDARD	SENTRY HPS	SENTRY MPS	SENTRY MPS-HP
▲	▲	▲	▲	▲	▲	▲	▲
▲	▲	▲	▲	▲	▲	▲	▲
▲	▲	▲	▲	▲	▲	▲	▲
▲	▲	▲	▲	▲		▲	▲
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▲							
▲	▲	▲	▲	▲	▲	▲	▲
			▲	▲	▲	▲	▲
▲		▲		▲	▲	▲	▲
▲	up to 4kVA		▲	on request	▲	▲	▲
▲	▲	▲	▲	▲	▲	▲	▲
on request	on request	on request	▲	on request	▲	▲	▲
▲	▲	▲	▲	▲	▲	▲	▲

▲ Option available

UPS range summary: rack version

	SPRING RACK	SENTINEL 6 RACK	SENTINEL XR RACK
Power Rating	500-800-1100-1500-2200-3000VA	700-1000-1500-2200-3000VA	3300-4000-5000-6000-6500[4] 8000-10000VA
Topology	Line Interactive	On line Double conversion	On line Double conversion
Input Voltage	230V single-phase	230V single-phase	230V single-phase 400V three-phase[3]
Output Voltage	230V single-phase	230V single-phase	230V single-phase
Inveter Output transformer	–	–	–
Automatic bypass	–	●	●
Maintenace Internal bypass	–	–	–
Battery test	●	●	●
Deep Battery Discharge protection	●	●	●
ECO mode operation	–	–	●
SMART ACTIVE operation	–	–	●
STAND BY – OFF (Emergency ligthing – EN 50171)	–	–	●
Frequency Converter	–	●	●
Battery expansion capability	only 2200 and 3000VA	●[2]	●
Backfeed protection	●	●	●
Base Monitoring Software (Watch&Save 3000)	●	●	●
RS 232 port	●	●	●
USB port	●	–	●
Dry Contact	●[1]	●[1]	●[1]
	pag. 36	**pag. 40**	**pag. 42**

● Standard
❍ Optional

(1) Available only when the RS 232 port is not used for other functions
(2) Function on request and set by the factory
(3) Only 6,5-8-10kVA
(4) Only 3Ph input

Options for UPS rack version

	SPRING RACK	SENTINEL 6 RACK	SENTINEL XR RACK
SOFTWARE PACKAGES			
Watch&Save 3000	▲	▲	▲
PowerNetGuard	▲	▲	▲
COMMUNICATION OPTIONS			
Netman 101 Plus - Box (TCP/IP, SNMP, HTTP)	▲	▲	▲
Netman 102 Plus - Slot (TCP/IP, SNMP, HTTP)	▲	▲	▲
MultiCom 301 - Box (MODBUS/JBUS)	▲	▲	▲
MultiCom 302 - Slot (MODBUS/JBUS)	▲	▲	▲
MultiCom 351 - Box (serial duplexer)	▲	▲	▲
MultiCom 352 - Slot (serial duplexer)	▲	▲	▲
MultiCom 362 (RS232 + USB)	▲		▲
MultiCom 372 (additional RS232 port and EPO)	▲		▲
MultiCom 382 (Dry contact extension + EPO)	▲		▲
MultiCom 401 (PROFIBUS)	▲	▲	▲
Multi I/O (Site Monitoring and Alarm configuration)	▲	▲	▲
USB converter		▲	▲
AS400 Interface	▲	▲	▲
Modem GSM			▲
OTHER OPTIONS			
Graphic Remote Panel	▲	▲	▲
External bypass cabinet rack 16A	▲	▲	up to 4kVA
IRMS	▲	▲	▲

▲ Option available

Rapido

The RAPIDO range is the ideal solution for small office and home systems (SOHO) requiring over voltage and mains failure protection. The compactness, versatility (a push-button switch with LED-based mimic panel and user-replaceable batteries) and functionality of the RAPIDO allow it to easily fit into any small office and home environment.

When the mains fails, connected loads are powered with a pseudo sine wave supply from the inverter. For additional security users can download a version of the Watch&Save 3000 UPS monitoring and control software.

LOAD CONFIGURATOR

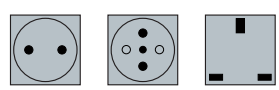
Load type	Power (VA)*
Personal computer	250
LCD Monitor	70
15" Monitor	150
Scanner, printer	200
Modem, TV, DVD reader, PlayStation, Hi-Fi, Phone, Fax	50
Laser printer**	200

*Average estimated value.
**Use the Rapido filtered power output.

CHARACTERISTICS

- Maximum compactness
- 3 sockets with mains fail protection
- 1 socket with filtering for powering loads such as laser printers
- Integrated protection for telephone line/modem
- Cold start capability: the UPS can power up without a mains supply present
- User replaceable batteries
- USB interface
- Can be placed on a desktop, floor or be wall-mounted
- Input supply and telephone cable included
- Short-circuit protection
- Auto restart (on mains return, after batteries have discharged)
- GS/TÜV marks
- Available with French (2P+T), UK or Schuko sockets

AVAILABLE SOCKETS



FRENCH SOCKET | ITALIAN/ SCHUKO SOCKET | BRITISH SOCKET

ADVANCED COMMUNICATION

- Watch&Save 3000 monitoring and shut-down software for Windows 2008, Vista, 2003, XP, Linux, Mac OS X and Sun Solaris
- Plug and Play function

APPLICATIONS

- Personal computers

2-YEAR WARRANTY

Rapido

Technical data

Models	Rapido 350	Rapido 550
Power	350VA/225W	550VA/335W

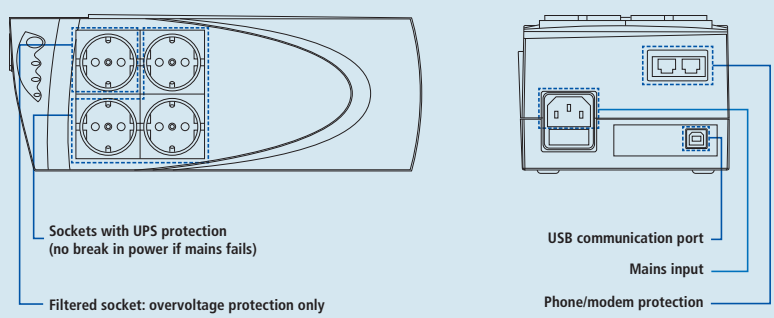
Input	Rapido 350	Rapido 550
Rated voltage	230 Vac	
Voltage range	188-262 Vac	
Frequency	50/60 Hz	

Output	Rapido 350	Rapido 550
Voltage on mains operation	230 Vac	
Frequency on battery operation	50 or 60 Hz	
Waveform on battery operation	Pseudo sinewave	

Batteries	Rapido 350	Rapido 550
Type	Maintenance-free lead-acid VRLA, AGM	
Recharge time	6-8 h	

System	Rapido 350	Rapido 550
Weight (kg)	3	3.1
Dimensions (wdh) (mm)	120x320x88	
Tel. protection	RJ11/J45 connectors	
Communication	On USB interface	
Safety compliance	EN 62040-1-1 and Directive 2006/95/EC; EN 62040-3	
EMC conformance	EN 62040-2 and Directives 2004/108EC	
Marks	CE; GS/TÜV	
Operating temperature	0 °C / +40 °C	
Colour	Graphite grey	
Altitude and relative humidity	6000 meters max. elevation, <95% non condensing	
Accessories provided	1 input supply cable, telephone cable	

Details



Alfa/Alfa Plus

The Alfa series is available in 400 to 1600VA models and has been designed to protect PCs and critical peripherals in home and small office environments.
Alfa is easy to install and provides powerful, economic protection for: IT equipment including PCs, Media Centers, PoE, Voip and other such peripherals, TVs, Home Cinemas, Satellite and Digital Terrestrial receivers, DVD readers and writers, Modems and xDSL routers, Small household appliances.

CHARACTERISTICS

- Compact dimensions and ergonomic design: Alfa can be placed on a desk top or other convenient location, with easy to access connections and informative front panel.
- Front panel LCD display (Plus version only) providing status, load and battery information and LEDs (standard version).
- Silent running: Alfa can be used to protect other sensitive electronic devices including Home Cinemas, CD Writers, DVD players, Satellite and Digital Terrestrial receivers.

ADVANCED COMMUNICATION

- Maximum power protection with Watch&Save 3000 monitoring and shutdown software available for free download from our website www.aros.it.
- It is suitable for installation on PC's running Windows 2008, Vista, 2003, XP; Linux, Mac OSX and the Sun Solaris operating system.

APPLICATIONS

- IT equipment including PCs Media Centers, PoE, Voip and other such peripherals
- TVs, Home Cinemas, Satellite and Digital Terrestrial receivers, DVD readers and writers
- Modems and xDSL routers
- Small household appliances

2-YEAR WARRANTY

Alfa/Alfa Plus

Technical data

Models	Alfa 400	Alfa 600	Alfa 800	AlfaP 400	AlfaP 600	AlfaP 800	AlfaP1100	AlfaP1600
Power	400VA/240W	600VA/360W	800VA/480W	400VA/240W	600VA/360W	800VA/480W	1100VA/660W	1600VA/960W

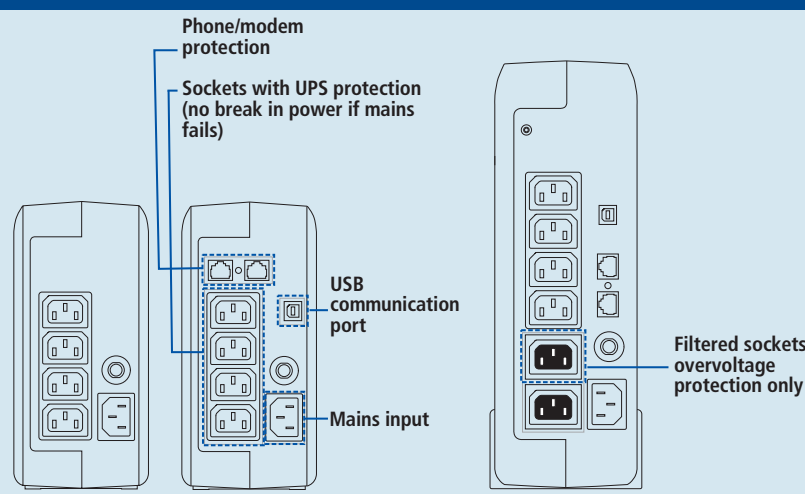
Input	Alfa 400	Alfa 600	Alfa 800	AlfaP 400	AlfaP 600	AlfaP 800	AlfaP1100	AlfaP1600
Rated voltage	220-240 Vac							
Voltage range	230 Vac (+20/-25%)							
Frequency	50/60 Hz auto sensing							

Output	Alfa 400	Alfa 600	Alfa 800	AlfaP 400	AlfaP 600	AlfaP 800	AlfaP1100	AlfaP1600
Voltage on mains operation	230 Vac (+/-15%)							
Frequency on battery operation	50 or 60 Hz (+/-1%)							
Voltage on battery operation	230 Vac (+/-10%)							

Batteries	Alfa 400	Alfa 600	Alfa 800	AlfaP 400	AlfaP 600	AlfaP 800	AlfaP1100	AlfaP1600
Type	Maintenance-free lead-acid VRLA, AGM							
Recharge time	6-8 h							

System	Alfa 400	Alfa 600	Alfa 800	AlfaP 400	AlfaP 600	AlfaP 800	AlfaP1100	AlfaP1600
Weight (kg)	3		3.2			3.4	6.6	7
Dimensions (wdh) (mm)	90x232x192						97x315x275	
Tel. protection	RJ11/J45 connectors							
Communication	n.a.		USB					
Output sockets	4 IEC		4 IEC or 3 Shuko/Italian or 3 french			6 IEC or 4 Shuko/Italian or 4 french		
Safety compliance	EN 62040-1-1 and Directive 2006/95/EC, EN 62040-3							
EMC conformance	EN 62040-2 and Directives 2004/108 EC							
Operating temperature	0 °C / +40 °C							
Colour	Dark grey (RAL 7016)							
Altitude and relative humidity	6000 meters max. elevation, <95% non condensing							
Accessories provided	2 output supply cables (IEC version), 1 USB cable (Plus version), user guide							

Details



PC Planet

The PC PLANET series includes the 400-600-800VA models and uses digital technology. The load is powered from the mains through an AVR to stabilise brownout, sag and surge voltages, and EMI filters to suppress spikes and transients. When the mains fails, the load is powered by the inverter with a pseudo sinewave to provide sufficient runtime for computer system shutdown using the Watch&Save 3000 software supplied as standard.

CHARACTERISTICS

- Mains power supply stabilisation and filtering (technology with AVR and filters for atmospheric disturbance suppression)
- Cold start capability: the UPS can power up without a mains supply present
- High reliability with built-in battery test feature
- Supplied with 2 output cables

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, for Windows 2008, Vista, 2003, XP; Mac OS X, Linux and the Sun Solaris operating system
- Standard USB interface

APPLICATIONS

- Personal computers
- Small computers network

2-YEAR WARRANTY

PC Planet

Technical data

Models	PC Planet 400	PC Planet 600	PC Planet 800
Power	400VA/240W	600VA/360W	800VA/480W

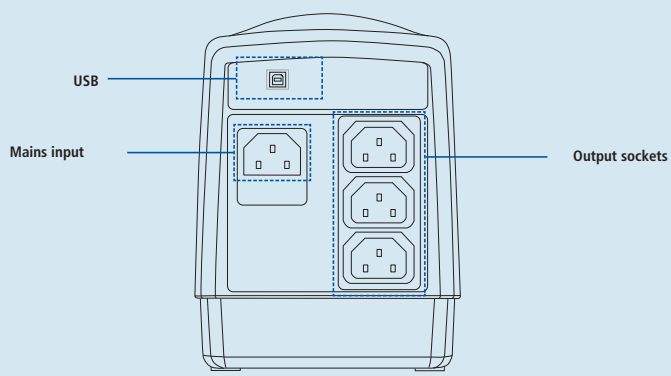
Input	PC Planet 400	PC Planet 600	PC Planet 800
Rated voltage	220-240 Vac		
Voltage range	230 Vac (+20/-26%)		
Frequency	50/60 Hz auto sensing		

Output	PC Planet 400	PC Planet 600	PC Planet 800
Voltage on mains operation	230 Vac (-8%, +10%)		
Voltage on battery operation	230 Vac (± 5%)		
Frequency on battery operation	50 or 60 Hz (± 0.5%)		
Waveform on battery operation	Pseudo sinewave		

Batteries	PC Planet 400	PC Planet 600	PC Planet 800
Type	VRLA AGM Maintenance-free lead-acid		
Recharge time	6-8 h		

System	PC Planet 400	PC Planet 600	PC Planet 800
Weight (kg)	5.8		6.2
Dimensions (wdh) (mm)	110x325x152		
Communication	USB		
Safety compliance	EN 62040-1-1 and Directive 2006/95/EC, EN 62040-3		
EMC conformance	EN 62040-2 and Directives 2004/108 EC		
Operating temperature	0 °C / +40 °C		
Colour	Dark grey (RAL 7016)		
Altitude and relative humidity	6000 meters max. elevation, <95% non condensing		
Accessories provided	2 output supply cables, communication software, user guide		

Details



Syncro

The SYNCRO series includes the 800-2000VA models and uses digital technology. The load is powered from the mains through an AVR to stabilise brownout, sag and surge voltages, and EMI filters to suppress spikes and transients.

When the mains fails, the load is powered by the inverter with a pseudo sinewave to provide sufficient runtime for computer system shutdown using the Watch&Save 3000 software supplied as standard. The UPS also incorporates a filtered socket for PC network and telephone line cable protection.

For advanced communication and top flight performance, SYNCRO is the ideal solution for small network users requiring total control of their power system.

CHARACTERISTICS

- Mains power supply stabilisation and filtering (technology with AVR and filters for atmospheric disturbance suppression)
- Cold start capability: the UPS can power up without a mains supply present
- Auto restart at power-up
- Integrated protection for PC networks and telephone line/modem connections RJ11/45
- High reliability with built-in automatic battery test feature

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems.
- The UPS is supplied with a communications cable for Plug and Play PC connection

APPLICATIONS

- Personal computers
- Small computers network

2-YEAR WARRANTY

Syncro

Technical data

Models	Syncro 800	Syncro 1000	Syncro 1500	Syncro 2000
Power	800VA/480W	1000VA/600W	1500VA/900W	2000VA/1200W

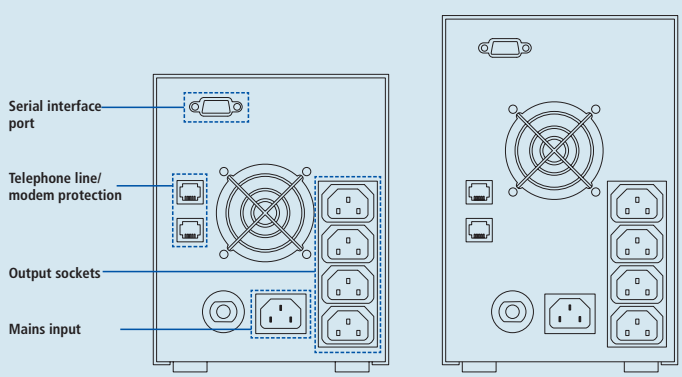
Input	Syncro 800	Syncro 1000	Syncro 1500	Syncro 2000
Rated voltage	220-230-240 Vac			
Voltage range	230 Vac (±25%)			
Frequency	50/60 Hz auto sensing			

Output	Syncro 800	Syncro 1000	Syncro 1500	Syncro 2000
Voltage on mains operation	230 Vac (-8%, +10%)			
Voltage on battery operation	230 Vac (± 5%)			
Frequency on battery operation	50 or 60 Hz (± 0.5%)			
Transfer time	2 ms			
Waveform on battery operation	Pseudo sinewave			

Batteries	Syncro 800	Syncro 1000	Syncro 1500	Syncro 2000
Type	Maintenance-free lead-acid VRLA, AGM			
Recharge time	4-6 h			

System	Syncro 800	Syncro 1000	Syncro 1500	Syncro 2000
Weight (kg)	14	14.5	15	20
Dimensions (wdh) (mm)	140x375x180			140x410x214
Protection	Battery low - overcurrent - short-circuit			
Tel/Modem protection	RJ11/RJ45 connectors			
Communication	RS232 port			
Safety compliance	EN 62040-1-1 and Directive 2006/95/EC, EN 62040-3			
EMC conformance	EN 62040-2 and Directive 2004/108 EEC			
Surge capability	IEC 801-5			
Noise	< 40 dBA at 1 m			
Colour	Dark grey (RAL 7016)			
Operating temperature	0 °C / +40 °C			
Storage temperature	-15 °C / +45 °C			
Relative humidity	< 95% non condensing			

Details



Syncro 800-1000-1500 Syncro 2000

Spring

The SPRING series includes models from 500VA to 3000VA and uses sinewave digital technology.
The SPRING range, with its advanced communications and connectivity options, is the ideal solution for the most demanding of customers looking for superior protection and versatility.
SPRING is the best protection for network devices, rack mounted servers, conventional rack-mounted or tower servers, network storage systems.

VERY HIGH PROTECTION

An Automatic Voltage Regulation provides stabilisation from brownouts, sag and surge voltages. EMI filters then provide further protection from spikes and transients.
When the mains power supply fails, the load is powered by the inverter and receives a true SINEWAVE supply for maximum power continuity and reliability.
The UPS also incorporates a protection for PC and network, telephone line/modem connections (RJ45-RJ11).

HIGH AVAILABILITY

Powershare output socket provides the load-shedding of the least critical load to maximise the back up time of the most critical servers.
Hot Swappable battery from the front of the UPS allows easy and no-risks maintenance of the UPS.
Additional Battery Box and extended charging current are available in 2200RT and 3000RT for very long back up time applications.
Predictive battery testing to spot potential battery deterioration and failure. Deep discharge protection to reduce overall battery aging.

VERSATILITY

Spring (2200RT and 3000RT) can be placed directly onto the floor or mounted in 19" rack mount cabinets.
The front panel digital display can be easily pulled out and rotated to suit the installation format.
Tower and Rack versions includes Emergency Power Off switch, which allows to shutdown the output power in case of emergency situations.
Cold start function enables Spring to start up when power network is not available.

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems.
- USB or RS232 serial port (selectable)
- Slot-in SNMP network adapter card
- LCD Display

APPLICATIONS

- Personal computers
- Small computers network
- Local Area Networks (LAN)
- Workstations
- Servers
- EPOS (Electronic Point Of Sales) system

2-YEAR WARRANTY

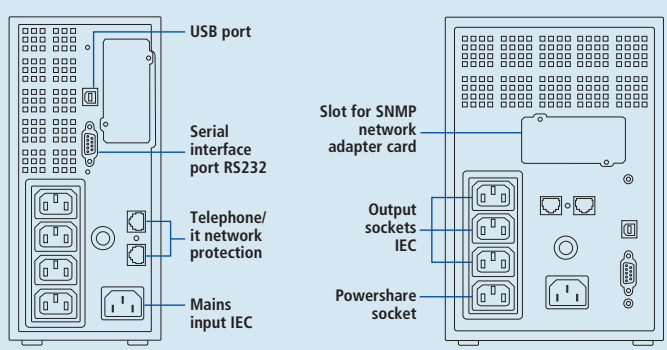
OPTIONS

Battery box
(only 2200RT/3000RT)

Technical data

Models	S 500T	S 800T	S 1100T	S 1500T	S 2000T	S 2200RT	S 3000RT
Power	500VA/350W	800VA/540W	1100VA/740W	1500VA/1050W	2000VA/1350W	2200VA/1540W	3000VA/2100W
Input	**S 500T**	**S 800T**	**S 1100T**	**S 1500T**	**S 2000T**	**S 2200RT**	**S 3000RT**
Rated voltage	230 Vac (selectable 200, 208, 220, 240V)						
Voltage range	160 V - 294 V						
Frequency	50/60 Hz auto sensing						
Frequency range	± 5%						
Output	**S 500T**	**S 800T**	**S 1100T**	**S 1500T**	**S 2000T**	**S 2200RT**	**S 3000RT**
Rated voltage	230 Vac (selectable 200, 208, 220, 240V)						
Frequency	50 or 60 Hz auto sensing						
Waveform	True sinewave						
Batteries	**S 500T**	**S 800T**	**S 1100T**	**S 1500T**	**S 2000T**	**S 2200RT**	**S 3000RT**
Type	VRLA AGM Maintenance-free lead-acid						
Recharge time	4-6 h						
System	**S 500T**	**S 800T**	**S 1100T**	**S 1500T**	**S 2000T**	**S 2200RT**	**S 3000RT**
Weight (kg)	7,2	10,6	11	18	18,4	31	32,8
Dimensions (wdh) (mm)	110x383x235			160x425x235		88x582x438	
IEC mains input plug	1 (10A)	1 (10A)	1 (10A)	1 (10A)	1 (10A)	1 (16A)	1 (16A)
IEC output sockets	4 (10A)	4 (10A)	4 (10A)	4 (10A)	4 (10A)	8 (10A) - 1 (16A)	
Protection	Overload - short-circuit - overvoltage - undervoltage - temperature - low battery						
Communication	USB / RS232 / slot for interface communication						
Safety compliance	IEC / EN62040-1-1 and Directive 2006/95/EC						
EMC conformance	IEC / EN62040-2 and Directive EEC 2004/108						
Performance	IEC / EN62040-3						
Operating temperature	0 °C / + 40 °C						
Storage temperature	-15 °C - 45 °C						
Relative humidity	< 95% non condensing						
Noise	< 50 dBA						
Colour	Dark grey (RAL 7016)						

Details



S 500T-800T-1100T

S 1500T-2000T

Spring Rack

The SPRING series includes models from 500VA to 3000VA and uses sinewave digital technology.The SPRING range, with its advanced communications and connectivity options, is the ideal solution for the most demanding of customers looking for superior protection and versatility. SPRING is the best protection for network devices, rack mounted servers, conventional rack-mounted or tower servers, network storage systems.

VERY HIGH PROTECTION

An Automatic Voltage Regulation provides stabilisation from brownouts, sag and surge voltages. EMI filters then provide further protection from spikes and transients.
When the mains power supply fails, the load is powered by the inverter and receives a true SINEWAVE supply for maximum power continuity and reliability.
The UPS also incorporates a protection for PC and network, telephone line/modem connections (RJ45-RJ11).

HIGH AVAILABILITY

Powershare output socket provides the load-shedding of the least critical load to maximise the back up time of the most critical servers.
Hot Swappable battery from the front of the UPS allows easy and no-risks maintenance of the UPS.
Additional Battery Box and extended charging current are available in tower 2200 and 3000 for very long back up time applications.
Predictive battery testing to spot potential battery deterioration and failure.
Deep discharge protection to reduce overall battery aging.

VERSATILITY

Spring RT (tower 1500, 2200 and 3000) can be placed directly onto the floor or mounted in 19" tower mount cabinets.
The front panel digital display can be easily pulled out and rotated to suit the installation format.
Tower and rack versions includes Emergency Power Off switch, which allows to shutdown the output power in case of emergency situations.
Cold start function enables Spring to start up when power network is not available.

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems.
- USB or RS232 serial port (selectable)
- Slot-in SNMP network adapter card
- LCD Display

APPLICATIONS

- Personal computers
- Small computers network
- Local Area Networks (LAN)
- Workstations
- Servers
- EPOS (Electronic Point Of Sales) system

2-YEAR WARRANTY

OPTIONS

Battery box
(only 2200RT/3000RT)

Spring Rack

Technical data

Models	S 500R	S 800R	S 1100R	S 1500RT	S 2200RT	S 3000RT
Power	500VA/350W	800VA/540W	1100VA/740W	1500VA/1050W	2200VA/1540W	3000VA/2100W

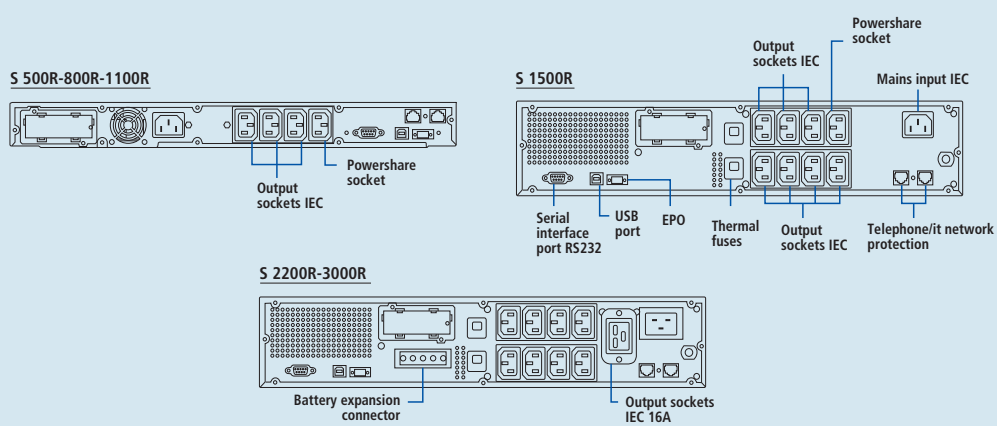
Input	S 500R	S 800R	S 1100R	S 1500RT	S 2200RT	S 3000RT
Rated voltage	230 Vac (selectable 200, 208, 220, 240V)					
Voltage range	160 V - 294 V					
Frequency	50/60 Hz auto sensing					
Frequency range	± 5%					

Output	S 500R	S 800R	S 1100R	S 1500RT	S 2200RT	S 3000RT
Rated voltage	230 Vac (selectable 200, 208, 220, 240V)					
Frequency	50 or 60 Hz auto sensing					
Waveform	True sinewave					

Batteries	S 500R	S 800R	S 1100R	S 1500RT	S 2200RT	S 3000RT
Type	VRLA AGM Maintenance-free lead-acid					
Recharge time	4-6 h					

System	S 500R	S 800R	S 1100R	S 1500RT	S 2200RT	S 3000RT
Weight (kg)	12	13,5	15,6	28,7	31	32,8
Dimensions (wdh) (mm)	19" x 460 x 1U	19" x 460 x 1U	19" x 460 x 1U	19" x 582 x 2U	19" x 582 x 2U	19" x 582 x 2U
IEC mains input plug	1 (10A)	1 (10A)	1 (10A)	1 (10A)	1 (16A)	1 (16A)
IEC output sockets	4 (10A)	4 (10A)	4 (10A)	8 (10A)	8 (10A) - 1 (16A)	
Protection	Overload - short-circuit - overvoltage - undervoltage - temperature - low battery					
Communication	USB / RS232 / slot for interface communication					
Safety compliance	IEC / EN62040-1-1 and Directive 2006/95/EC					
EMC conformance	IEC / EN62040-2 and Directive EEC 2004/108					
Performance	IEC / EN62040-3					
Operating temperature	0 °C / + 40 °C					
Storage temperature	-15 °C - 45 °C					
Relative humidity	< 95% non condensing					
Noise	< 50 dBA					
Colour	Dark grey (RAL 7016)					

Details



Sentinel 6

The SENTINEL 6 series includes the 700-1000-1500-2000-3000VA models and uses double conversion technology (VFI). The load is powered continuously by the inverter with an EMI filtered, stabilised and regulated sinewave supply. The input and output EMI filters considerably increase the immunity of the load to mains disturbances and surges, even on bypass.
The UPS can power the load for long periods (using battery extension packs) or provide sufficient runtime to allow shut-down of the protected systems using the Watch&Save 3000 software, supplied as standard.
For outstanding power protection and communication SENTINEL 6 is the best solution for sensitive and "mission-critical" applications.

SENTINEL 6 POWER models are supplied with a larger internal charger and with their matching external battery extension packs can achieve long back up times.

OPTIONS

Extended runtime solutions (except 700VA)

Isolation transformer box (wdh) mm

- **S6-700/1000/1000power/1500** 158x434x231
- **S6-2000/2000power 3000/3000power** 158x460x340

CHARACTERISTICS

- Reliable, filtered, stabilised and regulated sinewave output (double conversion technology VFI in conformance with IEC 62040-3 specifications) with filters for atmospheric disturbance suppression
- High level immunity to surges (up to 150%)
- Auto restart on mains return (programmable)
- Start-up without mains (cold start)
- Power factor correction with sinusoidal input to ensure a low impact on the mains supply (UPS input power factor, close to 1)
- Wide input voltage window (110-300Vac) to reduce battery usage
- Integrated protection for PC networks and telephone line/modem connections RJ45-RJ11
- Option to extend the back up time to several hours
- Software-programmable operating parameters
- Timer for scheduled shut-down and power up (software programmable)
- Highly reliable batteries with automatic and manual test feature
- Highly reliable system with full microprocessor control
- Breaker based input protection

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, for Windows 2008, Vista, 2003, XP, Mac OS X, Linux, Novell and most popular Unix operating systems.
- Free UPS tools configuration software
- RS232 serial port
- Slot-in SNMP network adapter card.

APPLICATIONS

- Small computers network
- Local Area Networks (LAN)
- Workstations
- Servers
- EPOS (Electronic Point of Sales) system

2-YEAR WARRANTY

Sentinel 6

Technical data

Models	S6-700	S6-1000	S6-1000 POWER	S6-1500	S6-2000	S6-2000 POWER	S6-3000	S6-3000 POWER
Power	700VA/490W	1000VA/700W		1500VA/1050W	2000VA/1400W		3000VA/2100W	

Input	S6-700	S6-1000	S6-1000 POWER	S6-1500	S6-2000	S6-2000 POWER	S6-3000	S6-3000 POWER
Rated voltage	220 - 230 - 240 Vac							
Minimum voltage range	110V up to 60% of load / 120V from 60% to 70% of load 140V from 70 to 80% of load / 160V from 80% to 100% of load							
Rated frequency	50/60 Hz ± 5Hz							
Power factor	> 0.97							
Input current	Sinewave							

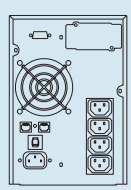
By pass	S6-700	S6-1000	S6-1000 POWER	S6-1500	S6-2000	S6-2000 POWER	S6-3000	S6-3000 POWER
Voltage range	180 - 264 Vac							
Frequency range	Selected frequency ±5Hz							

Batteries	S6-700	S6-1000	S6-1000 POWER	S6-1500	S6-2000	S6-2000 POWER	S6-3000	S6-3000 POWER
Type	Maintenance-free lead-acid VRLA, AGM							
Recharge time	2-4 h		-	2-4 h	4 h	-	4 h	-

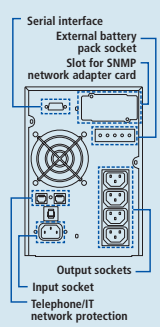
Output	S6-700	S6-1000	S6-1000 POWER	S6-1500	S6-2000	S6-2000 POWER	S6-3000	S6-3000 POWER
Rated voltage	Selectable 220, 230 or 240 Vac ±1.5%, Sinewave							
Voltage distortion	< 2%							
Frequency	50 or 60 Hz auto sensing							
Crest factor	3 : 1							
Overload	110% 30'; 130% 30"; 150% 10"							

System	S6-700	S6-1000	S6-1000 POWER	S6-1500	S6-2000	S6-2000 POWER	S6-3000	S6-3000 POWER
Weight (kg)	12	14	8	19	34	14	35	15
Dimensions (wdh) (mm)	158x400x231			158x500x231	192x460x340			
Operating temperature	0 °C / +40 °C							
Relative humidity	< 95% non condensing							
Protection	Overload - short-circuit - overvoltage - undervoltage - temperature - low battery							
Communication	RS232 + communication interface slot							
Compliance	EN 62040-1 EMC EN 62040-2 Directive 2006/95/EC - 2004/108 EC; EN 62040-3							
Surge capability	3KA 8/20 µs							
Colour	Dark grey (RAL 7016)							
Noise	<40 dBA							

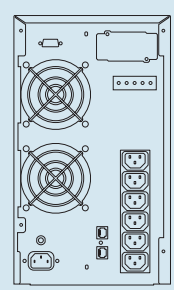
Details



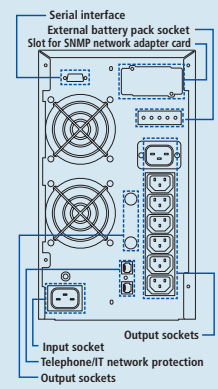
S6 700



S6 1000-1000 power
S6 1500



S6 2000-2000 power



S6 3000-3000 power

Sentinel 6 Rack

For outstanding power protection and communication SENTINEL 6 RACK is the best solution for sensitive and "mission-critical" applications.
The SENTINEL 6 RACK series comprises the 700-1000-1500-2200-3000VA models and uses double conversion technology (VFI). The load is powered continuously by the inverter with an EMI filtered, stabilised and regulated sinewave supply.
The input and output EMI filters considerably increase the immunity of the load to mains disturbances and surges, even on bypass. The UPS can power the load for long periods (using battery extension packs) or provide sufficient runtime to allow shut-down of the protected computer systems using the Watch&Save 3000 software, supplied as standard.

SENTINEL 6 RACK POWER models are supplied with a larger internal charger and with their matching external battery extension packs can achieve long back up times.

CHARACTERISTICS

- Reliable, stabilised, filtered voltage double on-line conversion technology (VFI according to EN62040-3 specifications) with filters for the suppression of atmospheric disturbances
- High overload capability (up to 150%)
- Auto restart when mains power returns (programmable)
- Power factor correction with sinusoidal input to ensure a low impact on the mains supply (UPS input power factor, close to 1)
- Wide input voltage range (110-300Vac) to reduce battery usage
- Integrated protection for PC networks and telephone line/modem connections RJ45-RJ11
- Option to extend the back up time to several hours
- Programming of operating functions via software
- Timer for scheduled shut-down (software programmable)
- High level reliability of the batteries (automatic and manual test)
- High level reliability of the UPS (full microprocessor control)
- Breaker based input protection

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, for Windows 2008, XP, Vista and 2003; Mac OS X, Linux, Novell and most popular Unix operating systems.
- The UPS is supplied with a communication cable for Plug and Play PC connection
- UPS tools configuration software
- Emergency Power Off (EPO) contact
- RS232 serial port
- Slot-in SNMP network adapter card.

APPLICATIONS

- Local Area Networks (LAN)
- Data Centers
- Servers
- Industrial PLCs
- Cash registers
- Emergency devices (lights/alarms)
- Telecommunication devices

2-YEAR WARRANTY

OPTIONS

Extended runtime solutions (except 700VA)

External manual bypass (wdh) mm/kg

- **Rack version**
  438x360x2U / 6,8
- **Box version**
  300x115x180 / 3,3

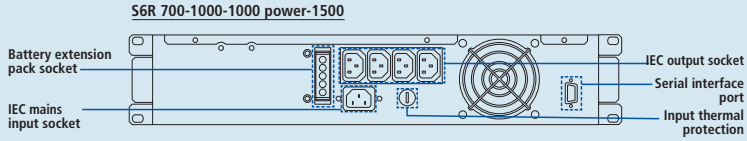
Sentinel 6 Rack

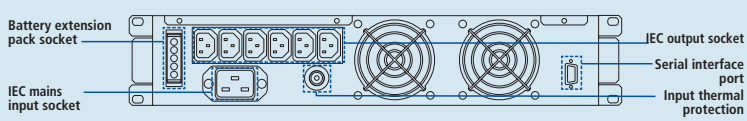
Technical data

Models	S6R 700	S6R 1000	S6R 1000 POWER	S6R 1500	S6R 2200	S6R 2200 POWER	S6R 3000	S6R 3000 POWER
Power	700VA/490W	1000VA/700W		1500VA/1050W	2200VA/1540W		3000VA/2100W	
Input	**S6R 700**	**S6R 1000**	**S6R 1000 POWER**	**S6R 1500**	**S6R 2200**	**S6R 2200 POWER**	**S6R 3000**	**S6R 3000 POWER**
Rated voltage	220 - 230 - 240 Vac							
Minimum voltage range	110V up to 60% of load/120V from 60% to 70% of load							
Rated frequency	50/60 Hz ± 5Hz							
Rated current (A)	2.5	3.5	5.2	6.8	10	13.8	14.4	16
Power factor	> 0.97							
By pass	**S6R 700**	**S6R 1000**	**S6R 1000 POWER**	**S6R 1500**	**S6R 2200**	**S6R 2200 POWER**	**S6R 3000**	**S6R 3000 POWER**
Voltage tolerance	Static ± 1.5%							
Frequency tolerance	± 0,5%							
Batteries	**S6R 700**	**S6R 1000**	**S6R 1000 POWER**	**S6R 1500**	**S6R 2200**	**S6R 2200 POWER**	**S6R 3000**	**S6R 3000 POWER**
Type/Recharge time	Maintenance-free lead-acid VRLA, AGM / 4 h							
Output	**S6R 700**	**S6R 1000**	**S6R 1000 POWER**	**S6R 1500**	**S6R 2200**	**S6R 2200 POWER**	**S6R 3000**	**S6R 3000 POWER**
Rated voltage	220 or 230 or 240 Vac selectable ± 1,5%, Sinewave							
Voltage distortion	< 2%							
Frequency	50 or 60 Hz selectable, ± 0,5 %							
Crest factor (Ipeak/Irms)	3 : 1 (up to 100% of load)							
Overload	110% 30'; 130% 30"; 150% 10"							
System	**S6R 700**	**S6R 1000**	**S6R 1000 POWER**	**S6R 1500**	**S6R 2200**	**S6R 2200 POWER**	**S6R 3000**	**S6R 3000 POWER**
Weight (kg)	13	16	9	21	30	13	31	14
Dimensions (wdh) (mm)	19"x390x2U			19"x480x2U	19"x560x3U	19"x480x2U	19"x560x3U	19"x480x2U
Communication	RS232 + communication interface slot							
Operating temperature	0 °C / +40 °C, ideal for battery +15 °C / +25 °C							
Relative humidity	< 95% non condensing							
Protection	Overload - short-circuit - overvoltage - undervoltage - temperature - low battery							
Compliance	EN 62040-1 EMC EN 62040-2 Directive 2006/95/EC - 2004/108 EC; EN 62040-3							
Capability	3KA 8/20 µs							
Colour	Dark grey (RAL 5004)							
Noise	<40 dBA at 1 m							

Details

S6R 700-1000-1000 power-1500





S6R 2200-2200 power-3000-3000 power

Sentinel XR

SENTINEL XR is the best solution for protecting medium sized networking applications which require the highest possible levels of reliability. The UPS is designed to support a wide applications from IT to security. SENTINEL XR is unique in that the UPS can be placed directly onto the floor or mounted in 19" rack mount cabinets. The range is available in 3300-4000-5000-6000-8000-10000VA models. The UPS is primarily an on-line double-conversion (VFI) technology system with further selectable operating modes that can configure the UPS to protect applications including emergency lighting, security and medical systems.

Each UPS features advanced communications and diagnostics including a digital front panel display that can turned to suit the installation format, RS232 and USB interfaces, and an internal adaptor slot for SNMP and other interface card options.
Watch&Save 3000 software is supplied as standard.

SIMPLIFIED INSTALLATION

- The UPS can be installed as a floor standing tower or 19" rack mount UPS. The front panel digital display can be pulled out (using the keys provided) and rotated to suite the installation format
- Low noise level (<40dBA) thanks to the digitally PWM controlled ventilation system which is load and temperature dependent, and the use of an inverter with a high switching frequency (>20kHZ, above the audible range)
- Optional bolt-on maintenance bypass (SENTINEL XR 5-6-8-10 kVA models) to allow service without disruption to the loads
- Performance guaranteed in temperatures up to 40°C
- Two IEC output plugs with thermal protection (SENTINEL XR 5-6-8-10 kVA)
- PowerShare output socket (2x10A IEC) functionality on SENTINEL XR 5-6-8-10 kVA models

SELECTABLE OPERATING MODES

- On line Mode (VFI)
- Economy Mode: selects Line Interactive VI technology to power non-critical loads from mains and achieve up to 98% operating efficiency
- Smart Active Mode: the UPS selects automatically whether to operate in On-line VFI technology - full system protection or Line Interactive VI mode depending on the stability of the mains supply
- Emergency Mode: the UPS can be set to work only when the mains fails - suitable for emergency lighting
- Frequency converter Mode: 50 or 60Hz

Display LCD custom

GUARANTEED OUTPUT QUALITY

- Even with typical distorting IT loads with crest factors of 3:1
- Increased short circuit current on the bypass
- Increased overload capacity: 150% on inverter even when mains supply has failed
- Reliable, filtered, stabilised and regulated sinewave output (double conversion technology VFI in conformity with IEC 62040-3 specifications) with filters for atmospheric disturbance suppression
- Rephasing of load as the UPS has an input power factor close to 1, with a sinusoidal input current

HIGHLY RELIABLE BATTERY PERFORMANCE

- Automatic and manual battery tests
- Unique Low Ripple Current Discharge (LRCD) to help prolong battery life
- Hot-swap user replaceable batteries
- Unlimited extendable back-up time using modular design Battery Extension Packs
- Increased ride through (without batteries) on mains breaks up to 40ms and for fluctuations ranging from 84 to 276Vac

OTHER CHARACTERISTICS

- Output voltage selection: 220-230-240Vac
- Auto restart when mains power returns programmed using the UPS Tools software supplied
- Bypass on: when the UPS is switched off, it automatically goes into bypass mode to charge the batteries
- Automatic power down due to minimum load
- End of battery discharge pre-alarm
- Delayed start up
- Completely digitally controlled
- Automatic bypass with no break in power supply
- Use of IMS (Insulated Metallic Substrates) modules
- Status, measurements, and alarms available on the standard backlit display
- UPS can be updated digitally (flash upgradeable)
- Input protected by resettable thermally activated switch
- Back-feed protection: to avoid current being fed back into the mains should a fault occur
- Manual switch over to bypass

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems.
- The UPS is supplied with a communications cable for 'Plug and Play' PC connection
- USB port
- RS232 serial port
- Interface card slot

APPLICATIONS

- Local Area Networks (LAN)
- Data Centers
- Servers
- Industrial PLCs
- Cash registers
- Electromedical devices
- Emergency devices (lights/alarms)

2-YEAR WARRANTY

OPTIONS

Extended runtime solutions with/without battery charger
External maintenance bypass (except 3300VA and 4000VA)
Interface cards
Telescopic rails for rack cabinet

Sentinel XR

Single-phase input
Single-phase output

Technical data

Models	SXRM-3300	SXRM-4000	SXRM-5000	SXRM-6000	SXRM-8000	SXRM-10000
Power	3300VA/2300W	4000VA/2400W	5000VA/3500W	6000VA/4200W	8000VA/6400W	10000VA/8000W

Input	SXRM-3300	SXRM-4000	SXRM-5000	SXRM-6000	SXRM-8000	SXRM-10000
Rated voltage	220 - 230 - 240 Vac					
Minimum voltage	164 Vac @ load 100% 84 Vac @ load 50%					
Rated frequency	50/60 Hz ± 5 Hz					
Power factor	> 0.98					
Current distortion	≤ 7%					

By pass	SXRM-3300	SXRM-4000	SXRM-5000	SXRM-6000	SXRM-8000	SXRM-10000
Voltage range	180 - 264 Vac (selectable in Economy Mode and SMART ACTIVE Mode)					
Frequency range	Selected frequency ±5 % (user configurable)					

Batteries	SXRM-3300	SXRM-4000	SXRM-5000	SXRM-6000	SXRM-8000	SXRM-10000
Recharge time	4 - 6 h					

Output	SXRM-3300	SXRM-4000	SXRM-5000	SXRM-6000	SXRM-8000	SXRM-10000
Rated voltage	220 - 230 - 240 Vac selectable					
Static variation	1,5 %					
Dynamic variation	≤ 5% in 20 ms					
Waveform	Sinewave					
Voltage distortion with linear load	< 3%					
Voltage distortion with non-linear load	< 6%					
Frequency	50/60 Hz selectable					
Crest factor	3 : 1					

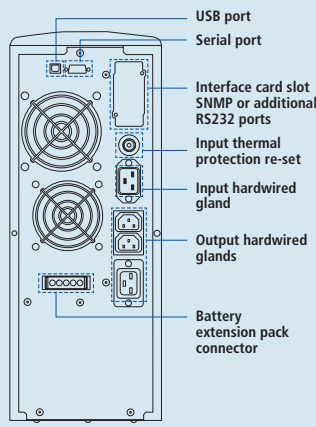
Overload capacity	SXRM-3300	SXRM-4000	SXRM-5000	SXRM-6000	SXRM-8000	SXRM-10000
100% < Load < 110%	1’					
110% < Load < 125%	4”					
Load > 150%	0.5”					

Sentinel XR

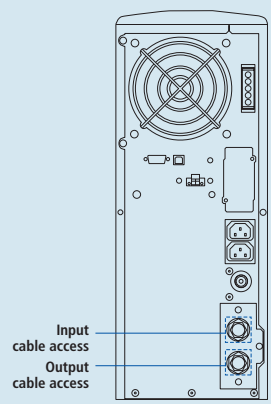
Single-phase input
Single-phase output

System	SXRM-3300	SXRM-4000	SXRM-5000	SXRM-6000	SXRM-8000	SXRM-10000
Weight (kg)	38	40	62	64	80	85
Dimensions (wdh) (mm) tower	175x520x455		175x660x455		2x175x660x455	
Dimensions (wdh) (mm) rack	483x520x175(4U)		483x660x175(4U)		2x483x660x175(4U)	
Efficiency	up to 98%					
Operating temperature	0 °C / +40 °C					
Relative humidity	< 95% non condensing					
Protection	Overload - short-circuit - overvoltage - undervoltage - temperature - low battery					
Compliance	EN 62040-1 EMC EN 62040-2 Directives 2006/95/EC-2004/108 EEC EN 62040-3					
Communication	USB / RS232 + communication interface slot					
Colour	Dark grey (RAL 7016)					
Noise	<40 dBA at 1 m		<45 dBA at 1 m			
Accessories provided	2x10A cables; 1xIEC-16A plug; software; serial cable; plastic keys to release display; handles kit		2 cable guides; terminal board connection; software; serial cable; plastic keys to release display; handles kit			

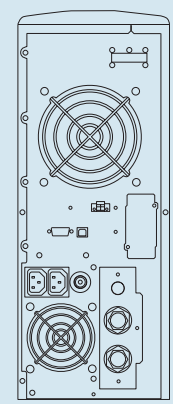
Details



SXRM 3300-4000



SXRM 5000-6000



SXRM 8000-10000

Sentinel XR

Three-phase input
Single-phase output

Technical data

Models	SXRT-6500	SXRT-8000	SXRT-10000
Power	6000VA/5200W	8000VA/6400W	10000VA/8000W

Input	SXRT-6500	SXRT-8000	SXRT-10000
Rated voltage	400 Vac tree-phase + N		
Minimum voltage	164 Vac @ load 100% - 84 Vac @ load 50%		
Rated frequency	50/60 Hz ± 5 Hz		
Power factor	> 0.95		

By pass	SXRT-6500	SXRT-8000	SXRT-10000
Voltage range	180 - 264 Vac (selectable in Economy Mode and SMART ACTIVE Mode)		
Frequency range	Selected frequency ±5 % (user configurable)		

Batteries	SXRT-6500	SXRT-8000	SXRT-10000
Recharge time	4 - 6 h		

Output	SXRT-6500	SXRT-8000	SXRT-10000
Rated voltage	220 - 230 - 240 Vac selectable		
Static variation	1,5 %		
Dynamic variation	≤ 5% in 20 ms		
Waveform	Sinewave		
Voltage distortion with linear load	< 3%		
Voltage distortion with non-linear load	< 6%		
Frequency	50/60 Hz selectable		
Crest factor	3 : 1		

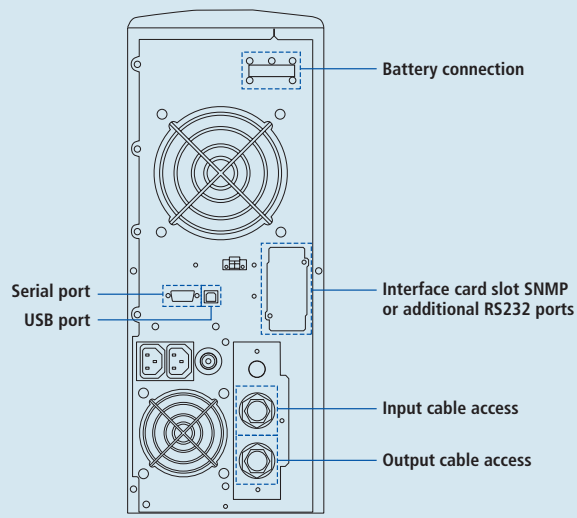
Overload capacity	SXRT-6500	SXRT-8000	SXRT-10000
100% < Load < 110%	1’		
110% ≤ Load < 150%	4”		
Load > 150%	0.5”		

Sentinel XR

Three-phase input
Single-phase output

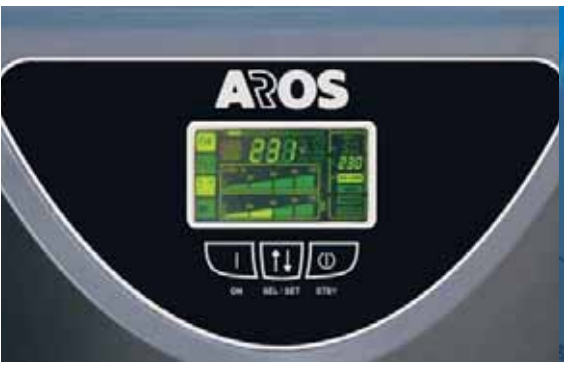
System	SXRT-6500	SXRT-8000	SXRT-10000
Weight (kg)	64	80	85
Dimensions (wdh) (mm) tower	2x175x660x455		
Dimensions (wdh) (mm) rack	2x483x660x175(4U)		
Efficiency	up to 98%		
Operating temperature	0 °C / +40 °C		
Relative humidity	< 95% non condensing		
Protection	Overload - short-circuit - overvoltage - undervoltage - temperature - low battery		
Compliance	EN 62040-1 EMC EN 62040-2 Directive 2006/95/EC- 2004/108 EC EN2040-3		
Communication	USB / RS232 + communication interface slot		
Colour	Dark grey (RAL 7016)		
Noise	<45 dBA at 1 m		
Accessories provided	2 cable guides; terminal board connection; software; serial cable; plastic keys to release display; handles kit		

Details



SXR 6500-8000-10000

Sentinel XR Plus



Sentinel XR Plus is the ideal solution for powering vital mission critical, sensitive loads such as electro-medical security applications in order to guarantee maximum reliability and availability.
The series includes 5kVA-6kVA single/single phase and 6.5kVA-8kVA-10kVA single/single phase and three/single phase models and uses double conversion on-line technology (VFI). The load is powered constantly by the inverter which supplies filtered, stabilised and regulated sinewave voltage. Moreover, the input and output filters increase the immunity of the load against mains power disturbances and lightning strikes.
Sentinel XR Plus is without doubt one of the best UPS systems on the market today thanks to the technology used, the features (selectable Economy Mode and Smart Active Mode) and the diagnostics offered (custom LCD display, RS232 and USB interfaces complete with Watch&Save 3000 software, EPO contact and slots for optional interface boards).

HIGH RELIABILITY

- Full microprocessor control.
- No break static and maintenance bypass.
- Features guaranteed up to 40 °C (the components are designed to operate at high temperatures and thus are subject to less stress at ordinary temperatures).

SELECTABLE OPERATING MODES

The operating mode can be programmed using the software or selected manually on the digital front panel display.

- On line Mode (VFI).
- Economy Mode: increases efficiency (up to 98%), and uses Line Interactive (VI) technology to power low priority loads from the mains supply.
- Smart Active Mode: the UPS automatically decides which operating mode to use (VI or VFI) depending on the quality of the mains supply.
- Emergency Mode: the UPS can be set to operate only when mains power fails (emergency only mode).
- Frequency converter Mode (50 or 60 Hz).

HIGH QUALITY OUTPUT VOLTAGE

- Even with distorting loads (IT loads with crest factor of up to 3:1).
- High short circuit current on bypass.
- High overload capacity: 150% on inverter, even when mains power fails.
- Filtered, stabilised and reliable voltage (double conversion on-line technology, VFI compliant with EN62040-3 specifications, with filters to suppress atmospheric interference).
- Rephasing of the load: UPS input power factor close to 1 with sinusoidal current absorption.

SIMPLIFIED INSTALLATION

- The UPS can be connected to both single phase and three phase mains supplies.
- Output terminal board + 2 IEC plugs to power local equipment (computers, modems, etc.).
- Easy to move thanks to built-in wheels.

HIGH BATTERY RELIABILITY

- Automatic and manual battery tests.
- Low Ripple Current Discharge system “LRCD” to prolong battery life.
- Unlimited extendable runtime thanks to dedicated modular design Battery Boxes.
- Increased ride-through for mains failures up to 40ms (high hold up time) and for fluctuations in the input voltage ranging from 84V to 276V).

LOW IMPACT ON MAINS POWER

- Sinusoidal input current on single phase/single phase series.

OTHER FEATURES

- Advanced diagnostics: status, measurements and alarms available on the custom LCD display.
- Very low noise level (<40dBA): for installation in any environment thanks to the PWM digitally controlled ventilation that is load dependent, and the use of an inverter with high switching frequency (>20kHz, value above the audible range).
- Autorestart when mains power returns, can be programmed using software or the digital front panel display.
- Emergency mode: the UPS can be programmed to work only when mains power fails (suitable for emergency lighting).
- Standard back feed protection: to avoid current being fed back into the mains system.
- Digital updating of the UPS (flash upgradable).

ADVANCED COMMUNICATION

- Compatible with the AROS TeleNetGuard remote assistance system.
- Advanced, multiplatform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shutdown software included, for Windows 2008, Vista, 2003, XP, Mac OS X, Sun Solaris, Linux, Novell and other Unix operating systems.
- RS232 serial port.
- Plug and Play connection.
- Slots for communication interface boards.

APPLICATIONS

- Local Area Networks (LAN)
- Data Centers
- Servers
- Industrial PLCs
- Cash registers
- Electromedical devices
- Emergency devices (lights/alarms)
- Telecomunication devices

Sentinel XR Plus

Technical data

Models	XRMP 5000	XRMP 6000	XRTP 6500	XRTP 8000	XRTP 10000
Power	5000VA/4000W	6000VA/4800W	6500VA/5200W	8000VA/6400W	10000VA/8000W

Input	XRMP 5000	XRMP 6000	XRTP 6500	XRTP 8000	XRTP 10000
Rated voltage	220-230-240 Vac single-phase		220-230-240 Vac single-phase or 380-400-415 Vac three-phase with neutral		
Minimum voltage without battery intervention	170 Vac @ load 100% / 140 Vac @ load 50%				
Rated frequency	50/60 Hz ± 5Hz				

By pass	XRMP 5000	XRMP 6000	XRTP 6500	XRTP 8000	XRTP 10000
Voltage range	180 - 264 Vac (selectable in Economy Mode and SMART Mode)				
Frequency range	Selected frequency ±5Hz				

Batteries	XRMP 5000	XRMP 6000	XRTP 6500	XRTP 8000	XRTP 10000
Recharge time	6 - 8 h				

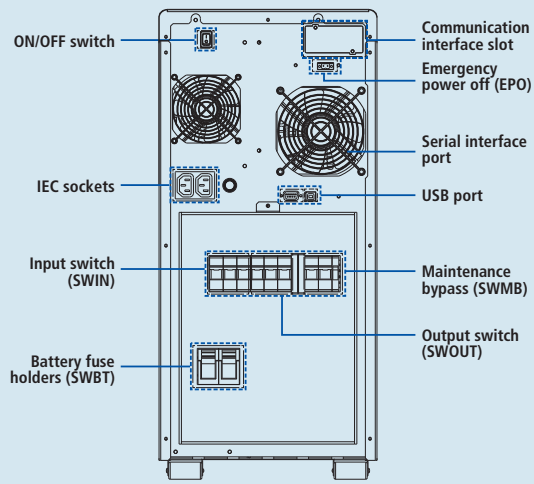
Output	XRMP 5000	XRMP 6000	XRTP 6500	XRTP 8000	XRTP 10000
Rated voltage	220 - 230 - 240 Vac selectable				
Static variation	± 1,5 %				
Dynamic variation	≤ 5% in 20 ms				
Waveform	Sinewave				
Voltage distortion with linear load	< 3%				
Voltage distortion with non-linear load	< 6%				
Frequency	50/60 Hz selectable or auto sensing				
Crest factor	≥ 3 : 1				

Overload capacity	XRMP 5000	XRMP 6000	SXRP 6500	SXRP 8000	SXRP 10000
100% < Load < 125%	1’				
125% ≤ Load < 150%	4”				
Load ≥ 150%	0.5”				

Sentinel XR Plus

System	XRMP 5000	XRMP 6000	XRTP 6500	XRTP 8000	XRTP 10000
Weight (kg)	89	90	91	94	95
Dimensions (wdh) (mm)	282x785x615				
Efficiency Smart Mode	up to 98%				
Operating temperature	0 °C ÷ +40 °C				
Humidity	< 95% non condensing				
Protection	Overload - short-circuit - overvoltage - undervoltage - temperature - low battery				
Compliance	EN 62040-1 EMC EN 62040-2 Directives 2006/95/EC - 2004/108 EC EN 62040-3				
Communication	RS232 + USB + remote contacts + communication interface slot				
Colour	Dark grey (RAL 7016)				
Noise	<45 dBA at 1 m				

Details



Flexus

Flexus is ideal for the protection of critical information and telecommunications networks which cannot run the risk of being powered from a power quality electrical supply.
The Flexus series is available in 10-12-15-20 kVA three-phase or single-phase input and single-phase output models, and 10-12-15-20-30-40-100-120 kVA three-phase input and output models, with double conversion on-line technology according to the VFI-SS-111 classification, as defined by the IEC EN 62040-3 standard.
Flexus has been designed and manufactured using state-of-the-art technologies in order to deliver maximum protection for critical users, a zero impact on the mains power supply and a high operating efficiency.
The high level of flexibility at the design stage means that there is full compatibility both with three-phase power and with single-phase sources, thus eliminating any critical factors in the connection between UPS and system.

ZERO IMPACT SOURCE

The superior technology of a Flexus UPS allows it be used where the site mains power supply is limited in capacity, or has an on-site generator and/or loads that generate current harmonic problems. Flexus is designed to have a zero-impact on its upstream power supply (mains or generator):

- Input current distortion < 3%
- Input power factor 0.99
- Power walk-in function to guarantee a progressive rectifier start-up
- Delayed switch-on function, to sequentially restart the UPS when installed as part of a parallel system.

Flexus also act as a filter and phase-shift protection device in respect to its upstream supply, providing protection from any harmonic components or reactive power generated by downstream loads.

BATTERY CARE SYSTEM

Battery management is one of the fundamentals of UPS management in order to ensure the system can perform in emergencies. The Flexus Battery Care System consists of a number of functions that together guarantee optimum battery performance.

Battery recharge: Flexus is suitable for use with sealed Valve Regulated (VRLA), AGM, GEL and open-vented lead acid batteries, in addition to Nickel-Cadmium. Depending on the battery type used, the recharging functions can include:

- One-level recharge, typical for the most commonly used VRLA AGM batteries
- Two voltage level recharge according the IU characteristic
- Charge blocking system to reduce consumption of the electrolyte and further extend the life of VRLA batteries.

Display

Compensation of the recharge voltage according to temperature in order to avoid excessive battery charging currents and potential overheating problems.
Battery Test in order to detect battery performance deterioration or failure.
Protection against deep discharges: during extended low load discharges, the end-of-discharge voltage is increased as recommended by battery manufacturers, to prevent damage to the battery set.
Ripple Current: recharge current ripple (residual AC component) is one of the most common causes of poor battery performance and reduced operating life. Flexus, with its high-frequency battery-charger, produces negligible current ripple levels and therefore helps to extend operating life.
Wide voltage range: the rectifier can operate from a wide input range (up to 40% at half load), reducing battery usage and helping to extend their operational life.

LOW MANAGEMENT COST

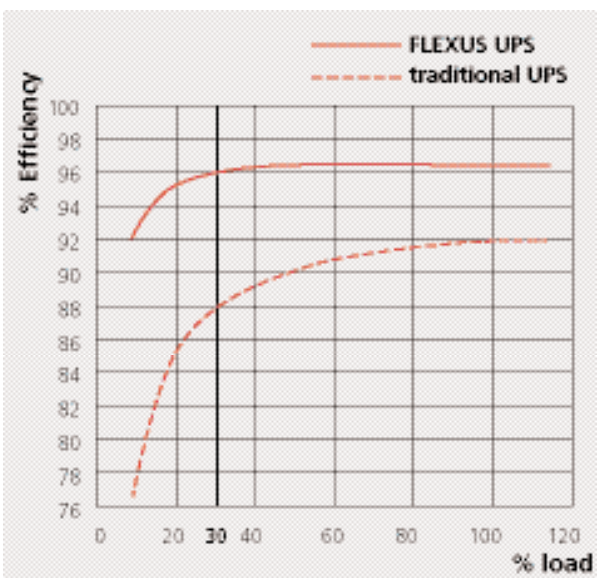
The high performance components and technology used by Flexus means that the UPS achieves exceptional performance and efficiency levels, from a very small footprint and overall compact dimensions:

- the lowest footprint in this category, only 0.26 sq. m. for 20kVA Flexus, batteries included
- the type of input stage guarantees a power factor close to 1 and a low current distortion without the addition of filters, which can be expensive and bulky
- output power factor of 0.9 providing up to 15% more active power than a traditional UPS and more load expansion.

HIGH EFFICIENCY

High operating efficiency up to 96,5% in on-line operation providing a 50% saving in energy usage per annum compared to traditional UPS products (92%). This exceptional performance can lead to a full initial investment recovery within three years.

Thanks to the high efficiency up to 96,5% Flexus saves money during the operation



Flexus 40kVA
Efficiency
(certified by TÜV)

FLEXIBILITY

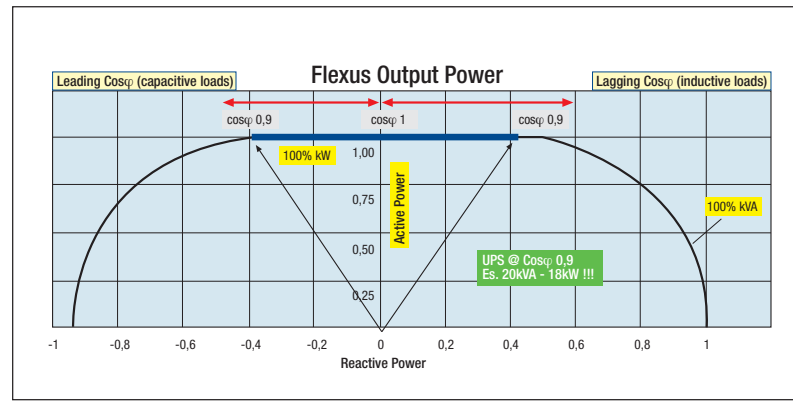
Flexus is suitable for use in a broad spectrum of applications, thanks to a variety of configurations, accessories and options providing flexibility and a choice of performance levels:

- suitable for powering capacitive loads, such as blade servers, without any reduction in active power (0.9 in lead to 0.9 lag)
- multiple operating modes: On Line, Eco, Smart Active and Stand By Off
- Frequency converter mode
- configurable Power Share connections to ensure backup for the most critical loads or programmed to operate only when mains power fails
- Cold Start facility that starts the UPS even when it is not connected to the mains
- FT/FM H version: in cabinet 440x850 x 1320 WDH, it provides optimum solutions when medium or long term runtime is required
- optional temperature sensor for external battery cabinets, to assist the recharge voltage compensation
- additional battery chargers to optimise recharge times
- optional dual input to mains power supply
- isolation transformer options to vary neutral connectivity in the event of separate power sources or for galvanic isolation between input and output
- battery cabinets of various sizes and capacities to ensure prolonged runtime.

ADVANCED COMMUNICATION

Flexus is equipped with a graphic display that provides information, measures, states and alarms regarding the UPS in 5 different languages.

- Advanced multiplatform communication, for all operating systems and network environments: Watch&Save 3000 monitoring and shutdown software included with for Windwows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems
- Compatible with PowerNetGuard for the remote assistance service RS232 or USB serial port
- 3 slots for the installation of optional communication accessories such as network adapter and volt-free contacts.
- REPO (Remote Emergency Power Off)
- Input for synchronization from an external source
- Graphic mimic panel display for remote connection
- Input for connection of the auxiliary contact of an external manual bypass

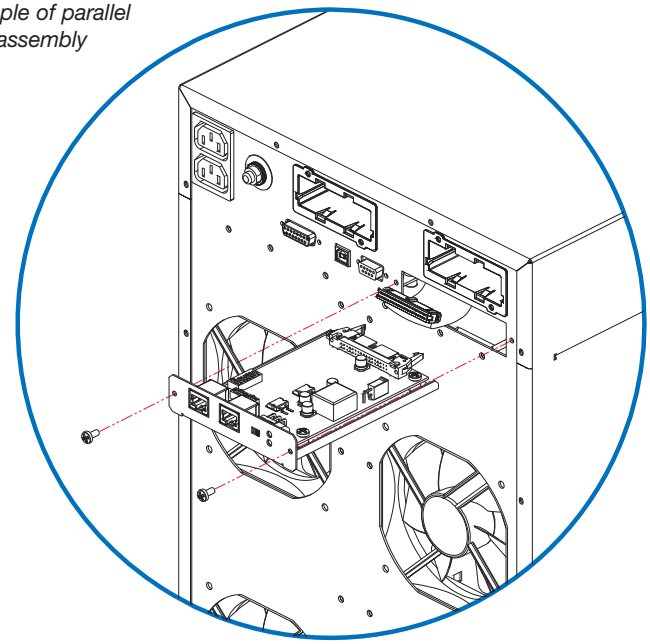


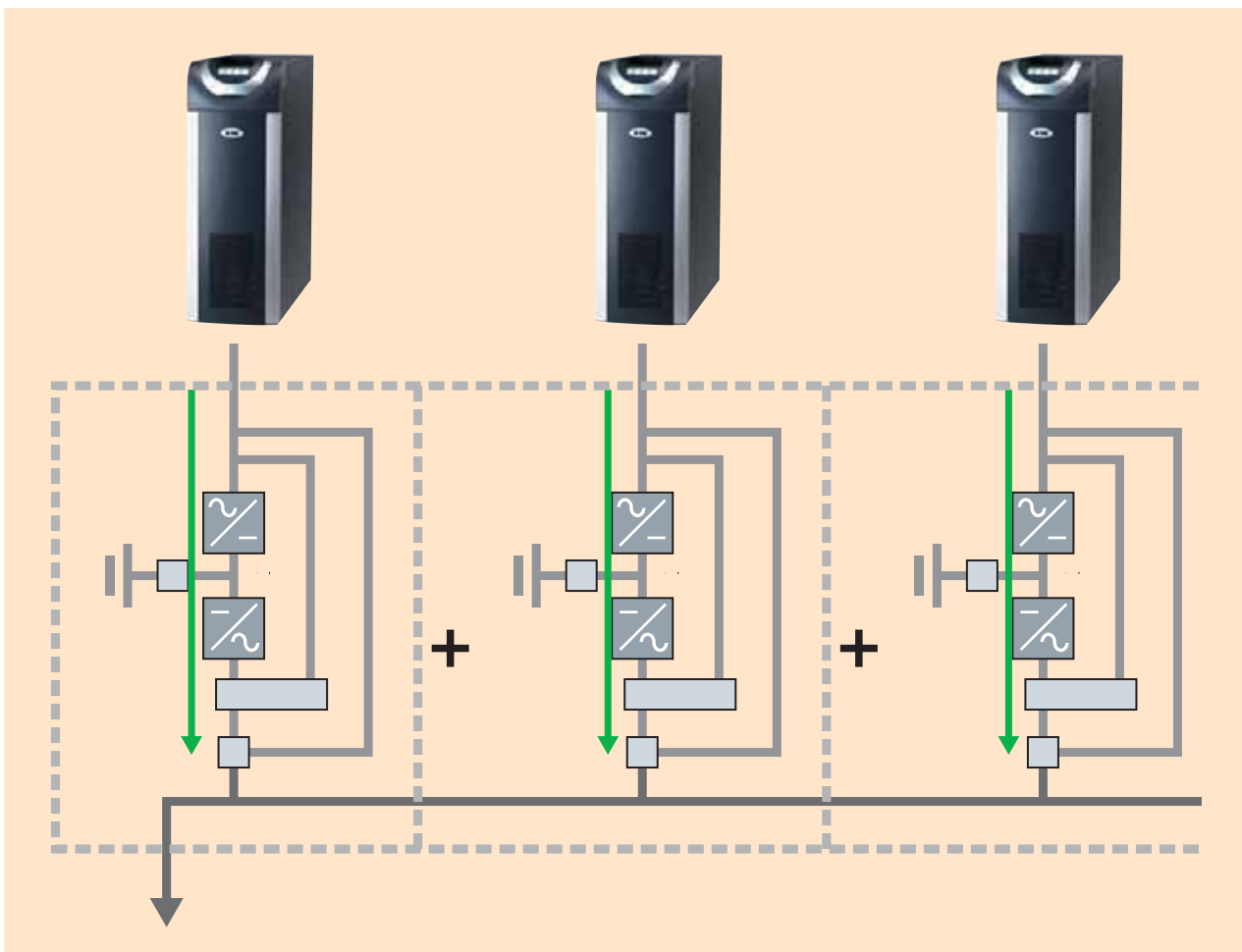
SUITABLE FOR EMERGENCY LIGHTING APPLICATIONS

EXPANDABILITY

Flexus can work in parallel up to 6 units to increase the power availability and the reliability. The single module or the parallel system can be expanded at any time to suit additional power requirements without influencing the initial investment. Thanks to the peculiarity of the “Hot System Expansion” feature, the new UPS can be connected in parallel while the other units are on-line and supplying regular power to the load. When the UPS is connected it will be updated automatically from the other UPS on line. To increase the flexibility of the Flexus system, on each unit a second input is available for a synchronization with the external source other than the bypass mains. The parallel configuration may be with single or common battery.

Example of parallel card assembly





Flexus

Three-phase or single-phase input
Single-phase output

Technical data

Models	FM 10	FM 12	FM 15	FM 20
Power (kVA)	10	12	15	20

Input	FM 10	FM 12	FM 15	FM 20
Rated voltage	380- 400-415 Vac three-phase with Neutral / 220-230-240Vac single-phase			
Rated frequency	50/60 Hz			
Frequency tolerance	40 ÷ 72 Hz			
Power factor at full load	0.99			
Current distortion	THDI ≤ 3%			

By pass	FM 10	FM 12	FM 15	FM 20
Rated voltage	220-230-240 Vac			
Number of phases	1			
Voltage tolerance	180 ÷ 264V (selectable)			
Rated frequency	50 or 60 Hz (selectable)			
Frequency tolerance	±5 (selectable)			

Output	FM 10	FM 12	FM 15	FM 20
Rated power (kVA)	10	12	15	20
Active power with load PF from 0,8 cap. to 0,8 ind.	8	9.6	12	16
Output power factor	0.8			
Number of phases	1			
Rated voltage	220-230-240 Vac (selectable)			
Static variation	± 1%			
Dynamic variation	± 3%			
Crest factor (Ipeak/Irms)	3 : 1			
Voltage distortion	≤ 1% with linear load / ≤ 3% with non-linear load			
Frequency	50/60 Hz			
Frequency stability on battery mode	0.01%			
Overload at Pf 0.8	110% for 10 minutes, 133% for 1 minute, 150% for 5 seconds			

Batteries	FM 10	FM 12	FM 15	FM 20
Type	VRLA AGM/GEL			
Recharge time	6 h			

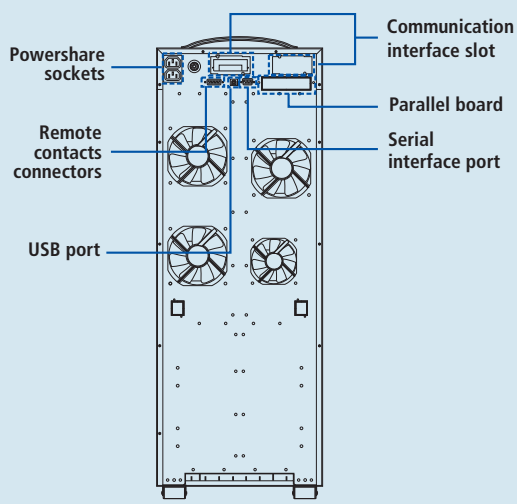
Flexus

Three-phase or single-phase input
Single-phase output

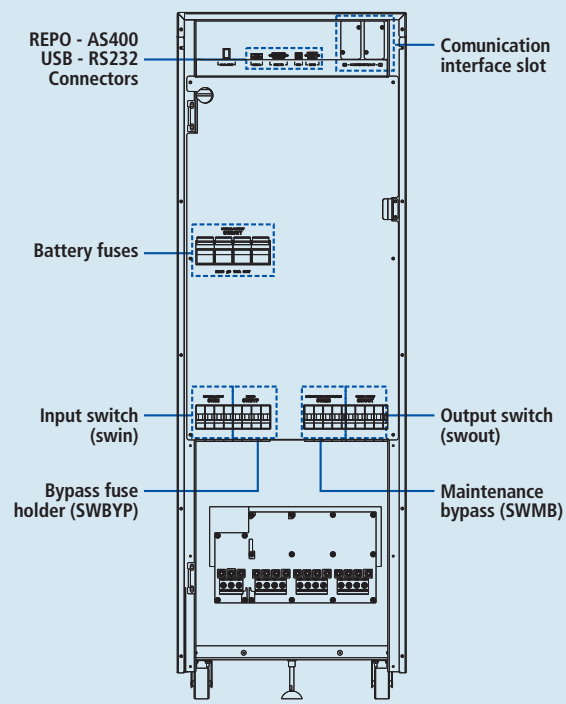
System	FM 10	FM 12	FM 15	FM 20
Weight with internal batteries (kg)	180	182	190	195
Dimensions (wdh) (mm)	320x840x930 (440x850x1320 Version FM-H)			
Communication	3 communication interface slots/RS232/USB			
Operating temperature	0°C - 40°C			
Relative humidity	90% non condensing			
Colour	Dark grey (RAL 7016)			
Noise	< 52 dBA at 1 m			
Protection rating	IP20			
Efficiency Smart Mode	≥ 98% in Economy mode			
Compliance	European Directives: L V 2006/95/EC Low voltage directive EMC 2004/108/EC Electromagnetic compatibility directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification according to IC 62040-3 (Voltage Frequency Independent) VFI - SS - 111			

Details

FM 10-12-15-20



FM-H 10-12-15-20



Flexus

Three-phase input
Three-phase output

Technical data

Models	FT 10	FT 12	FT 15	FT 20	FT-H 30	FT-H 40	FT100	FT120
Power (kVA)	10	12	15	20	30	40	100	120
Input	**FT 10**	**FT 12**	**FT 15**	**FT 20**	**FT-H 30**	**FT-H 40**	**FT100**	**FT120**
Rated voltage	380- 400-415 Vac three-phase +N							
Rated frequency	50/60 Hz							
Frequency tolerance	40 ÷ 72 Hz							
Power factor at full load	0.99							
Current distortion	THDI ≤ 3%							
By pass	**FT 10**	**FT 12**	**FT 15**	**FT 20**	**FT-H 30**	**FT-H 40**	**FT100**	**FT120**
Rated voltage	380-400-415 Vac three-phase +N							
Number of phases	3 + N							
Voltage tolerance	180 ÷ 264V (selectable)							
Rated frequency	50 or 60 Hz (selectable)							
Frequency tolerance	±5 (selectable)							
Output	**FT 10**	**FT 12**	**FT 15**	**FT 20**	**FT-H 30**	**FT-H 40**	**FT100**	**FT120**
Rated power (kVA)	10	12	15	20	30	40	100	120
Active power with load PF from 0,9 cap. to 0,9 ind.	9	10.8	13.5	18	27	36	90	108
Output power factor	0.9							
Number of phases	3 + N							
Rated voltage	380-400-415 Vac (selectable)							
Static variation	± 1%							
Dynamic variation	± 3%							
Crest factor (Ipeak/Irms)	3 : 1							
Voltage distortion	≤ 1% with linear load / ≤ 3% with non-linear load							
Frequency	50/60 Hz							
Frequency stability on battery mode	0.01%							
Overload at Pf 0.8	115% unlimited, 125% for 10 minutes, 150% for 1 minute, 168% for 5 seconds							
Batteries	**FT 10**	**FT 12**	**FT 15**	**FT 20**	**FT-H 30**	**FT-H 40**	**FT100**	**FT120**
Type	VRLA AGM/GEL							
Recharge time	6 h							

Flexus

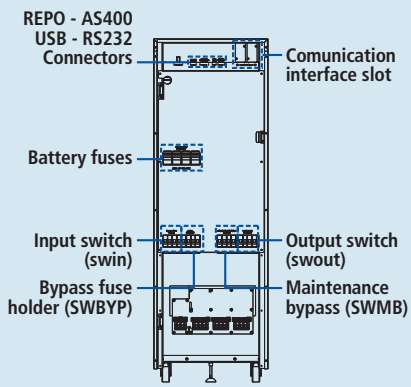
Three-phase input
Three-phase output

System	FT 10	FT 12	FT 15	FT 20	FT-H 30	FT-H 40	FT100	FT120
Weight with internal batteries (kg)	180	182	190	195	335	350	460*	480*
Dimensions (wdh) (mm)	320x840x930 (440x850x1320 FT-H version)				440x850x1320		750x855x1900	
Communication	3 communication interface slots/RS232/USB							
Operating temperature	0°C - 40°C							
Relative humidity	90% non condensing							
Colour	Dark grey (RAL 7016)							
Noise	< 52 dBA at 1 m				< 48 dBA at 1 m		< 65 dBA at 1 m	
Protection rating	IP20							
Efficiency Smart Mode	up to 99%							
Compliance	European Directives: L V 2006/95/EC Low voltage directive EMC 2004/108/EC Electromagnetic compatibility directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification according to IEC 62040-3 (Voltage Frequency Independent) VFI - SS - 111							

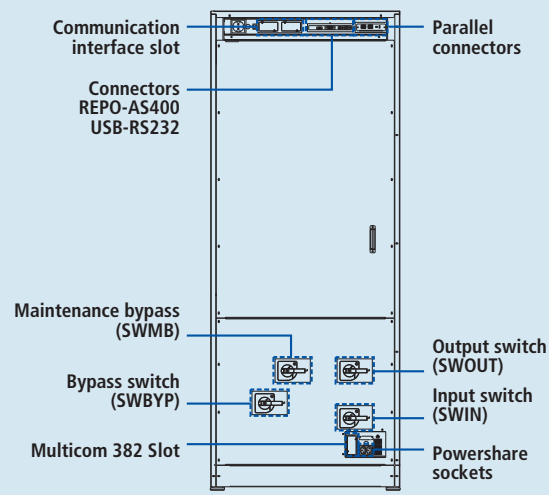
*weight without batteries

Details

FT-H 10-12-15-20-30-40



FT 100-120



For the FT details please refer to the FM range, p.57

Sentry Multistandard

SENTRY MULTISTANDARD provides maximum protection for critical data processing networks and security applications, thanks to its advanced design, selectable operating modes and communications capabilities. Operating modes include: On-line, Economy, Smart-Active, Standby/Off and Voltage Stabilisation. Standard communications features include a front panel LCD with 128 potential messages, RS232 interfaces, EPO input, communications interface slot and Watch&Save 3000 management software.

The SENTRY MULTISTANDARD series includes 60-80 kVA three-phase models, and uses on-line double conversion technology (VFI). The load is powered continuously by the inverter with a filtered, stabilised and regulated sinewave supply. The input and output filters considerably increase the immunity of the load to mains disturbances and surges, even on bypass.

LOW POWER CONSUMPTION

- On-line Mode: up to 92% efficiency can be achieved due to the use of IGBT technology, increasing to 98% in one of the other operating modes
- Economy Mode: uses Line Interactive (VI) technology to power less critical loads from the mains supply for certain periods
- Smart Active Mode: if the mains supply is out of range, the UPS will power the load from the inverter as an On-line UPS. When the mains supply returns to within range again, the UPS will monitor this for a certain period before selecting Line Interactive operation.

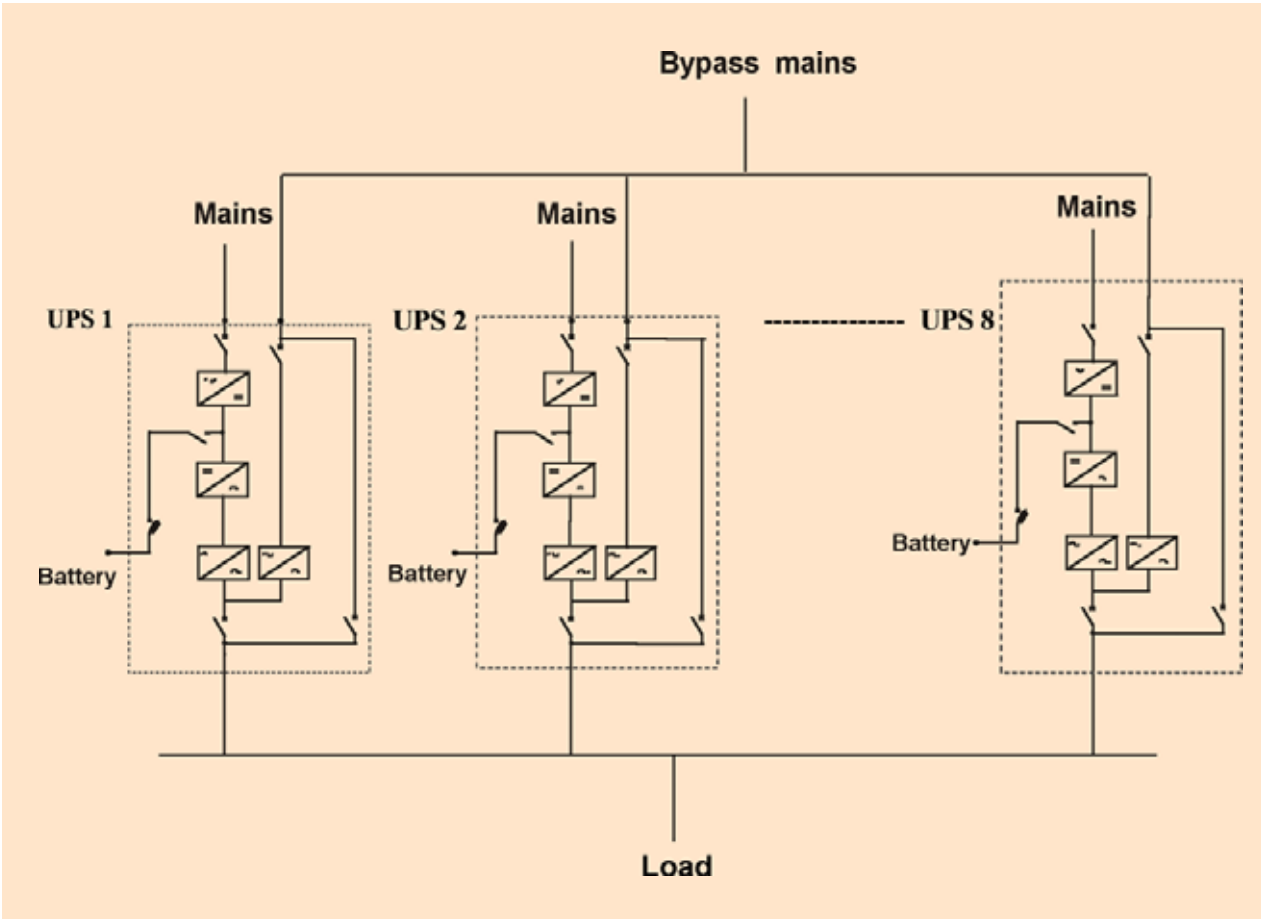


Fig. 1 – Block diagram UPS in parallel up to 8 units

MAXIMUM RELIABILITY AND AVAILABILITY

- Connect up to 8 units in parallel or N+1 redundancy, of even different power ratings.

HIGH LEVEL BATTERY RELIABILITY

- Automatic battery test
- Recharge compensated for temperature
- Automatic or manual rapid charge (boost) – duration progammable

MAINTENANCE SIMPLICITY = LOW MTTR

Open the door and remove the protective panel (standards requirement) and the power components - mounted on a sliding tray - can be pulled out to provide easy access to all the electrical and electronic components for maintenance and repair work. This particular feature means that the MTTR (Mean Time To Repair) is much lower than traditional UPS designs with less easily reached assemblies, which has longer times due to the compact size of the products and difficult access to the parts.

A large amount of maintenance information is available from the front mimic panel and LCD. In addition system operating parameters are software configurable via a local PC to allow new functions to be added or adjustments made to operating specifications.

SENSITIVE SUPPLY COMPATIBLE

For power supply sources that are particularly sensitive to harmonics (generator sets or transformers of low power with respect to that of the UPS) it is often a good idea to take action to limit the harmonics injected back into the supply by the UPS.

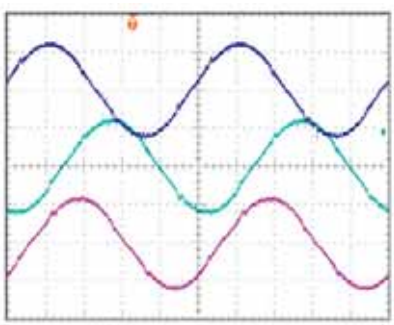
SENTRY MULTISTANDARD series is also available with built-in active filter using high frequency Isolated Gate Bipolar (IGBT) Technology with Digital Signal Processor (DSP) control. The Active Filter helps to reduce harmonics generated by the UPS into the supply which could disrupt the operation of downstream generators and transformers whose rating is closely matched to that of UPS.

- *advanced technology*
  The active filter reduces harmonic distortion of the phase and neutral currents. The Digital Signal Processor (DSP) and the "current mode" instantly control and monitor the input current to maintain a perfect sinewave with less than 4% harmonic distortion
- *maximum efficiency*
  Thanks to the active filter Sentry Multistandard systems have low input distortion even at low loads and their overall efficiency is not affected by generator frequency variations or line impedance
- *reduction of neutral current*
  The active filter reduces the input neutrals current by up to 3.5 times their nominal rating to help avoid oversizing input protections and conductors
- *maximum reliability*
  Sentry Multistandard systems are extremely reliable. Overall UPS performance is unaffected should the harmonic filter fail
- *excellent capabilities*
  Input distortion: (THDi) 4%
  Input power factor: >0.99

Sentry Multistandard can also be supplied without the Active Filter for installations less sensitive to current harmonics.

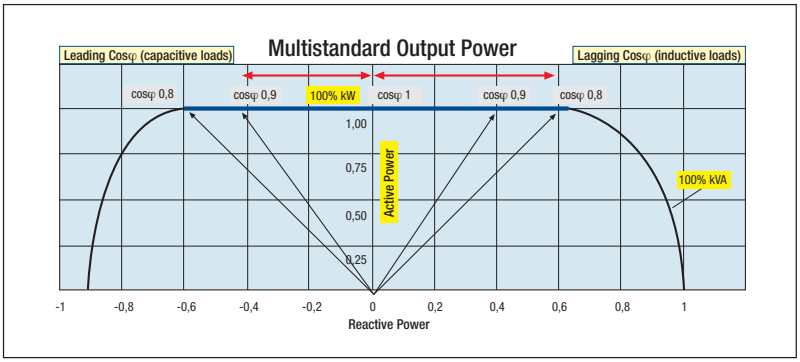
OTHER CHARACTERISTICS

- Suitable for powering capacitive loads such as blade servers, without any reduction of the active power, from 0.8 leading to 0.8 lagging
- High level diagnostics: event log with 128 messages, states, measurements and alarms - available from the built-in LCD in several languages
- Reduced noise levels: high frequency inverter bridge
- Back feed protection standard: to avoid energy feeding back into the mains supply (in compliance with CEI 11-20; DK5600)
- Power factor correction (input power factor, close to 1)
- By pass may be deactivated to allow operation as a frequency converter (at 50 or 60 Hz)
- Emergency operation: the UPS can be set to operate only when the mains fails (for emergency lighting)



UPS input current with optional Active Filter

Sentry Multistandard with Active Filter (internal view)



Operating status, alarms, applied load, battery charging.

Controls and settings menu.

Language selection menu.

Battery voltages, internal operating temperatures.

ADVANCED COMMUNICATION

- Compatible with TeleNetGuard for remote maintenance
- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems
- The UPS is supplied with a communications cable for 'Plug and Play' PC connection
- Double RS232 serial ports
- Network adapter slot for SNMP agent
- Emergency Power Off (EPO) shutdown input contact
- Remote control mimic panel

APPLICATIONS

- Local Area Networks (LAN)
- Data Centers
- Servers
- Industrial PLCs
- Cash registers
- Electromedical devices
- Emergency devices (lights/alarms)
- Telecommunication devices
- e-Business (Servers, Farms, ISP/ASP/POP)

OPTIONS

Input isolation transformer
Active filter
LED remote status panel
LCD based remote control panel
Graphic Display remote control panel
Empty battery cabinet for prolonged runtime
Additional battery charger
Dual input mains

Sentry Multistandard

Three-phase input
Three-phase output

Technical data

Models	ST60	ST80
Power (kVA)	60	80

Input	ST60	ST80
Rated voltage	400 Vac three-phase + N	
Voltage range	± 20%	
Frequency range	45 ÷ 65 Hz	
Power factor	> 0.99	
Current harmonic distortion	THDi 4%	

By pass	ST60	ST80
Rated voltage	400 Vac	
Number of phases	3 + N	
Permitted voltage range	± 15% (selectable from ± 5% to ± 25%)	
Rated frequency	50/60 Hz	
Permitted frequency range	± 2% (selectable from ± 1% to ± 5%)	

Batteries	ST60	ST80
Type	Lead, open vase acid and VRLA, AGM / GEL; NiCd	
Recharge time	4-8 h	

Output	ST60	ST80
Rated power (kVA)	60	80
Active power with load PF from 0,8 cap. to 0,8 ind. (kW)	48	64
Number of phases	3 + N	
Rated voltage	380 - 400 - 415 Vac selectable	
Voltage regulation range	346 ÷ 422 Vac	
Crest factor (Ipeak/Irms)	3 : 1	
Distortion with linear load	2%	
Static stability	± 1%	
Dynamic stability	± 5% in 10 ms	
Frequency	50 / 60 Hz selectable	
Overload	125% 150% of the rated current for 10'/1'	

System	ST60	ST80
Weight (kg)	180	192
Dimensions (wdh) (mm)	500x740x1400	
Remote signaling	Volt free contacts	
Remote controls	EPO and bypass	
Communication	Double RS232/C + remote contacts + communication interface slot	
Operating temperature	0 °C / +40 °C	
Relative humidity	<95% non condensing	
Colour	Dark grey (RAL 7016)	
Noise	<56 dBA at 1 m	<60 dBA at 1 m
Protection degree	IP20	
Efficiency Smart Mode	> 98,5%	
Compliance	EN 62040-1 EMC EN 62040-2 EN 62040-3	

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Sentry HPS

SENTRY HPS HM/HT provides maximum protection for vital 'mission-critical' networks, security applications (electro-medical) and industrial applications thanks to its outstanding mechanical and electrical design.
The load is powered continuously by the inverter with a filtered, stabilised and regulated sinewave supply. The input and output EMI filters considerably increase the immunity of the load to mains disturbances and surges.
The SENTRY HPS HM/HT series uses on-line double conversion technology (VFI) with an isolation transformer on the inverter output.
SENTRY HPS HM/HT is supplied with Watch&Save 3000 software as standard and can be remotely monitored using the PowerNetGuard system from anywhere in the world.
Additional battery extension packs allow the standard battery runtime to be extended up to several hours.

MINIMUM IMPACT ON SUPPLIES - EASY SOURSE

Input current distortion <4% for the Sentry HPS with filter with sinusoidal absorption to remove the risk of resonance with other input supply users or phase shift capacitor sets. The absorbed current distortion is independent of input supply parameters such as impedance.
This enables Sentry HPS to deliver maximum performance levels regardless of the installation environment. With these input features Sentry HPS can achieve significant savings in terms of sizing and power supply sources - isolation transformers and generators over less sophisticated power systems.

MAXIMUM BATTERY CARE

- Battery deep discharge protection
- Temperature compensating charger
- Built-in automatic and manual battery test feature

SIMPLE TO INSTALL

- Capability to install the UPS into any distribution system (neutral not required on rectifier input)
- Capability to separate the rectifier/bypass power networks and to power these from two separate sources, without Galvanic isolation (necessary on UPS without an output transformer)

HIGH RELIABILITY

- Extremely high short-circuit current to ensure compatibility with the most difficult transformer applications (lighting, drives and industrial processes) and an isolation transformer on the inverter output
- Full microprocessor control with no-break static and manual bypasses
- IGBT technology

OTHER CHARACTERISTICS

- 0.8 power factor makes Sentry HPS suitable for powering ICT and industrial loads
- High level diagnostics: event log with 128 messages, states, measurements and alarms - available from the built-in LCD in several languages
- BACK FEED protection: to avoid energy feeding back into the mains supply should a fault occur

OPTIONS

- Isolation transformers
- Various lead acid battery types including 5 year, 10 year and 20 year design life, VRLA, NiCad options and runtimes up to several hours
- Communications software
- Solutions for low input current distortion
- Closed loop parallel kit option (to be ordered with the unit)

MAXIMUM RELIABILITY AND AVAILABILITY

- Connect up to 8 units in parallel or N+1 redundancy, even of different power ratings.
  The UPS continue to work in parallel even if one of the interconnecting communication cables is disconnected (CLOSED LOOP).

LOW CONSUMPTION LEVELS

- Sentry HPS can achieve efficiencies >98% thanks to a selectable Economy Mode which can be used in stable electrical environments to provide power supply continuity should the mains fail.

ADVANCED COMMUNICATION

- Compatible with TeleNetGuard for remote maintenance
- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, with SNMP agent, for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems
- The UPS is supplied with a cable for direct connection to the PC (Plug and Play)
- RS232 double serial port
- Installation slot for an Emergency Power Off (EPO) interface to allow the UPS to be switched off remotely in an emergency.
- Generator interface: enables desynchronisation of the UPS output from a generator supply which may be subject to phase and frequency variations. The interface also enables more economic use of the battery charger.

NO-BREAK POWER ARCHITECTURES

The Sentry HPS range features a wide range of modules and configurations that can be manufactured into one complete system to solve your power problems. Each system is therefore unique and we ask that you consult our engineers for your specific application.

APPLICATIONS

- Servers
- Local Area Network (LAN)
- Data centers
- Telecommunications
- Industrial equipment
- Electro-medical equipment

Sentry HPS

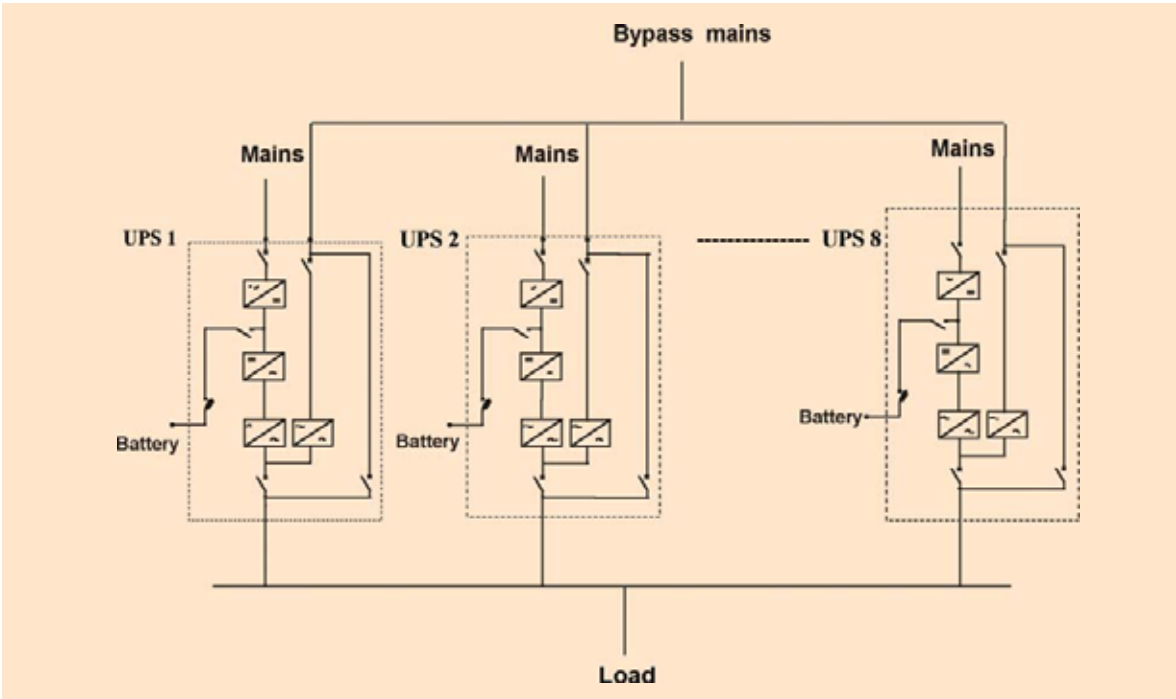

Fig 1- Bock diagram UPS in parallel up to 8 units

EXPANDABILITY

The units can be connected in parallel up to 8 units to increase power availability or redundancy.
The single module or the system can be expanded any time to suit power requirements without influencing the initial investment.
Thanks to the peculiarity of the "Hot System Expansion" feature, the additional unit can be connected in parallel while the other units are on-line and supplying regular power to the load. The new UPS is on-line and will be set up automatically.

80 kVA

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Sentry HPS

Three-phase input
Single-phase output

Technical data

Models	HM8	HM10	HM15	HM20	HM30	HM40	HM60	HM80	HM100
Power (kVA)	8	10	15	20	30	40	60	80	100

Input	HM8	HM10	HM15	HM20	HM30	HM40	HM60	HM80	HM100
Rated voltage	400 Vac three-phase								
Voltage range	± 20%								
Frequency range	45 ÷ 65 Hz								
Power factor	> 0.92 with harmonic filter								
Current harmonic distortion	< 5% with harmonic filter								
Soft start	0-100% in 10"								

By pass	HM8	HM10	HM15	HM20	HM30	HM40	HM60	HM80	HM100
Rated voltage	230 Vac single-phase								
Permitted voltage range	± 15% (selectable from ± 10% to ± 25% from front panel)								
Rated frequency	50/60 Hz								
Permitted frequency range	± 2% (selectable from ± 1% to ± 5% from front panel)								
Standard features	BackFeed protection; split bypass line								

Batteries	HM8	HM10	HM15	HM20	HM30	HM40	HM60	HM80	HM100
Type	Maintenance-free lead-acid VRLA AGM / GEL; NiCd								
Maximum recharge current (A)	0,2xC10								
AC ripple voltage	<1%								

Inverter output	HM8	HM10	HM15	HM20	HM30	HM40	HM60	HM80	HM100
Rated power (kVA)	8	10	15	20	30	40	60	80	100
Active power (kW)	6.4	8	12	16	24	32	48	64	80
Number of phases	1								
Rated voltage (V)	230 Vac single-phase								
Regulation of the output voltage	220 ÷ 244 Vac phase/neutral (from control panel)								
Crest factor (Ipeak/Irms)	3 : 1								
Static stability	± 1%								
Dynamic stability	± 5%								
Frequency	50/60 Hz configurable								
Overload	110% 125% 150% of the rated current for 5h/10'/1'								
Frequency stability	± 0,05% on mains failure ± 2% (selectable from ± 1% to ± 5%) with mains supply present								

System	HM8	HM10	HM15	HM20	HM30	HM40	HM60	HM80	HM100
Weight (kg)	From 190 to 460	From 200 to 470	From 220 to 490	From 230 to 500	290	340	440	520	650
Dimensions (wdh) (mm)	555x720x1200						800x740x1400		1070x 740x1400
Remote signaling	Volt free contacts								
Remote controls	EPO and Bypass								
Communication	RS232 + remote contacts								
Operating temperature	0 °C / +40 °C								
Relative humidity	< 95% non condensing								
Colour	Light grey (RAL 7035)								
Noise	54 dBA at 1 m		60 dBA at 1 m		65 dBA at 1 m				
Protection degree	IP20								
Efficiency Smart Mode	up to 98%								
Compliance	Safety: EN 62040-1-1 (Directive 2006/95/EC); EMC: 6200-2 (Directive 2004/108/EC)								
Internal batteries	Yes	Yes	Yes	Yes	No	No	No	No	No

Sentry HPS

Three-phase input
Three-phase output

Models	HT10	HT15	HT20	HT30	HT40	HT60	HT80
Power (kVA)	10	15	20	30	40	60	80

Input	HT10	HT15	HT20	HT30	HT40	HT60	HT80
Rated voltage	400 Vac three-phase						
Voltage range	± 20%						
Frequency range	45 ÷ 65 Hz						
Power factor	> 0.9 with harmonic filter						
Current harmonic distortion	< 5% with harmonic filter						
Soft start	0-100% in 10"						

By pass	HT10	HT15	HT20	HT30	HT40	HT60	HT80
Rated voltage	400 Vac three-phase						
Permitted voltage range	± 15% (selectable from ± 10% to ± 25% from front panel)						
Rated frequency	50/60 Hz						
Permitted frequency range	± 2% (selectable from ± 1% to ± 5% from front panel)						
Standard features	BackFeed protection; split bypass line						

Batteries	HT10	HT15	HT20	HT30	HT40	HT60	HT80
Type	Maintenance-free lead-acid VRLA AGM/GEL; NiCd						
Maximum recharge current (A)	0,2xC10						
AC ripple voltage	<1%						

Inverter output	HT10	HT15	HT20	HT30	HT40	HT60	HT80
Rated power (kVA)	10	15	20	30	40	60	80
Active power (kW)	8	12	16	24	32	48	64
Number of phases	3 + N						
Rated voltage	400 Vac						
Regulation of the output voltage	348 ÷ 424 Vac phase/neutral (from control panel)						
Crest factor (Ipeak/Irms)	3 : 1						
Static stability	± 1%						
Dynamic stability	± 5%						
Frequency	50/60 Hz configurable						
Overload	110% 125% 150% of the rated current for 5h/10'/1'						
Frequency stability	± 0,05% on mains failure; ± 2% (selectable from ± 1% to ± 5%) with mains supply present						

System	HT10	HT15	HT20	HT30	HT40	HT60	HT80
Weight (kg)	From 210 to 480	From 220 to 490	From 230 to 500	From 282 to 552	330	450	555
Dimensions (wdh) (mm)	555x720x1200					800x740x1400	
Remote signaling	Volt free contacts						
Remote controls	EPO and Bypass						
Communication	RS232 + remote contacts						
Operating temperature	0 °C / +40 °C						
Relative humidity	< 95% non condensing						
Colour	Light grey (RAL 7035)						
Noise	54 dBA at 1 m		60 dBA at 1 m			62 dBA at 1 m	
Protection degree	IP20						
Efficiency	up to 98%						
Compliance	Safety: EN 62040-1-1 (Directive 2006/95/EC); EMC: 6200-2 (Directive 2004/108/EC)						
Internal batteries	Yes	Yes	Yes	Yes	No	No	No

Sentry MPS
Three-phase output

QUALITY POWER SUPPLY

SENTRY MPS is an on-line double conversion UPS (VFI SS 111 in accordance with IEC EN 62040-3) with a transformer isolated inverter. With a compact footprint and high power quality output, SENTRY MPS is designed to protect "mission critical" applications including data processing, telecommunications, industrial processes, security and electro-medical systems.

BATTERY CARE SYSTEM: MAXIMUM LIFETIME POTENTIAL

Traditionally, when a mains supply is present the UPS charges its batteries. Battery power is used for the inverter should the input supply fail. Efficient battery management and care is therefore essential to the overall performance of the UPS in an emergency. The SENTRY MPS Battery Care System consists of a range of features designed to provide optimum performance and enhanced operating life:

- Dual level charging regime to optimise recharge currents and lower recharge times;
- Temperature compensation and deep discharge protection to reduce overall battery aging;
- Charge blocking system to reduce electrolyte consumption and lengthen the life of VRLA batteries;
- Predictive battery testing to spot potential battery deterioration and failure.

SENTRY MPS is also compatible with different battery technologies: open-vase lead acid and AGM and Gel VRLA, NiCd.

MINIMUM INPACT ON SUPPLIES - EASY SOURCE

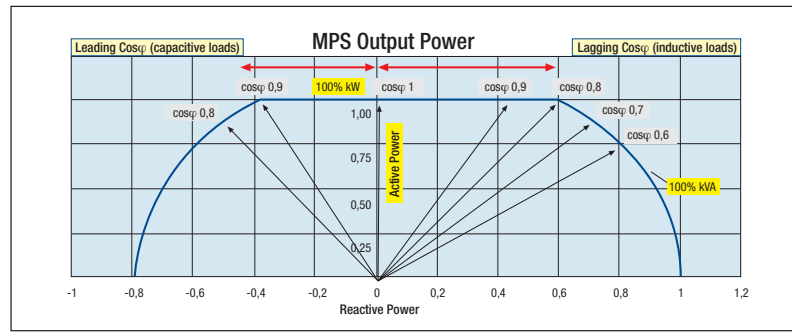
SENTRY MPS technology removes the problems of over sizing downstream power sources, whilst improving load power factors and current harmonics. The UPS features the latest input current absorption techniques including progressive rectifier start-up and the option to reduce battery charging currents. These features make SENTRY MPS one of the most generator compatible and environmentally friendly UPS available.

FLEXIBILITY

SENTRY MPS is suitable for a wide range of applications including IT and the most demanding industrial environments suitable for power capacitive loads such as blade servers, without any reduction of the active power, from 0,8 lagging to 0,9 leading. With a broad of accessories and options, complex configurations and system architectures can be achieved to guarantee maximum power availability and the option to add new UPS without interruption to existing users. Using the AROS UPS Group Synchroniser (USG) and Parallel Systems Joiner (PSJ) sophisticated inter group parallel and redundant systems can be achieved to provide the highest possible levels of resilience and availability.

EASY INSTALLATION

SENTRY MPS has a small footprint (only 0,64 sqm for 200kVA and 1,63 sqm for 400kVA). Front access to internal assemblies and top panel ventilation make space allocation within confined data processing or plant rooms easy. SENTRY MPS can be placed against a wall as there is no requirement for rear or side panel access for maintenance or ventilation.



FREQUENCY CONVERTER OPERATION

The standard UPS with 400V operating voltage can be configured on site as 50 to 60Hz frequency converter and vice-versa, with or without connection to the battery. On request units 400V-50Hz input and 440V-60Hz output are also available.

For the frequency converter range 400Hz output see page 84.

ADVANCED COMMUNICATION

- Compatible with TeleNetGuard for remote maintenance
- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems
- The UPS is supplied with a cable for direct connection to the PC (Plug and Play)
- RS232 double serial port
- Installation slot for an Emergency Power Off (EPO) interface to allow the UPS to be switched off remotely in an emergency.
- Remote mimic panel (LED or LCD)
- Generator interface: enables desynchronisation of the UPS output from a generator supply which may be subject to phase and frequency variations. The interface also enables more economic use of the battery charger.

APPLICATIONS

- Servers
- Local Area Network (LAN)
- Data centers
- Telecommunications
- Industrial equipment
- Electro-medical equipment

OPTIONS

Input Isolation transformer
UPS Group Syncroniser (UGS)
Parallel System Joiner (PSJ)
Interface for generator
LED remote status panel
LCD based remote control panel
Graphic Display Remote panel
Empty battery cabinets for prolonged runtime

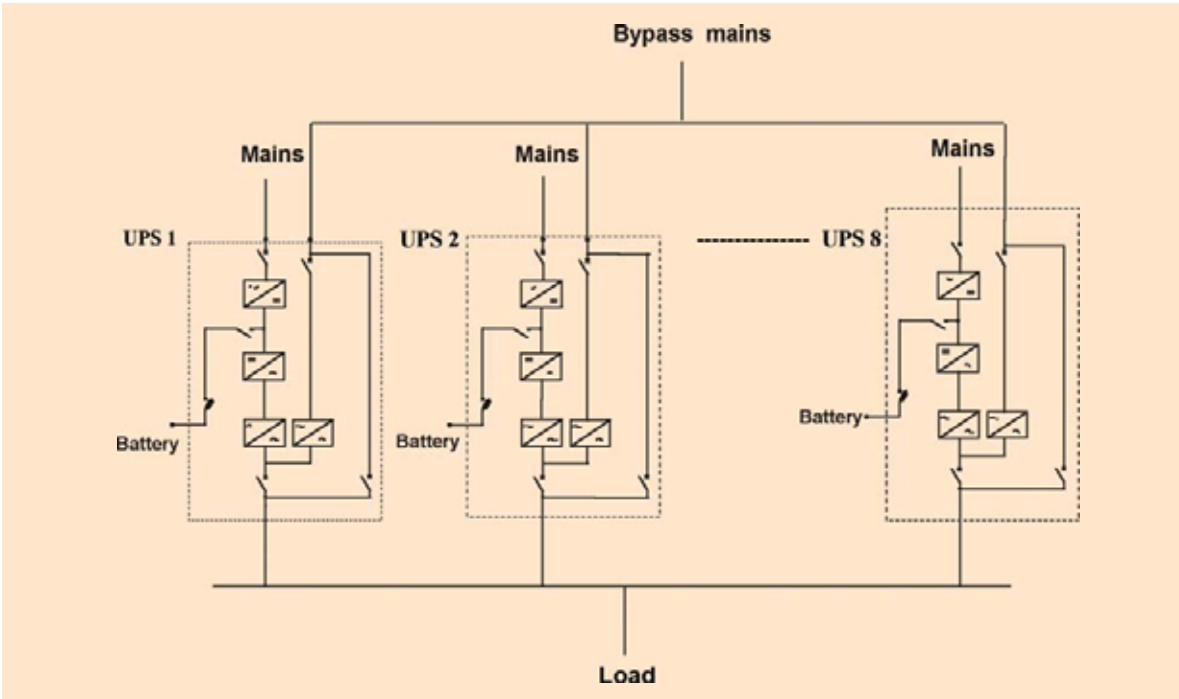


Fig 1- Bock diagram UPS in parallel up to 8 units

EXPANDABILITY

The units can be connected in parallel up to 8 units to increase power availability or redundancy.
The single module or the system can be expanded any time to suit power requirements without influencing the initial investment.
Thanks to the peculiarity of the "Hot System Expansion" feature, the additional unit can be connected in parallel while the other units are on-line and supplying regular power to the load. The new UPS is on-line and will be set up automatically.

200kVA

DUAL BUS SYSTEM

The Dual Bus System powers the priority loads from two independent sources.

This configuration increases the redundancy and availability level of a multi-module configuration. Each bus may consist of a single module or up to 8 modules in parallel, kept in synchro by the UGS (UPS Group Synchroniser).

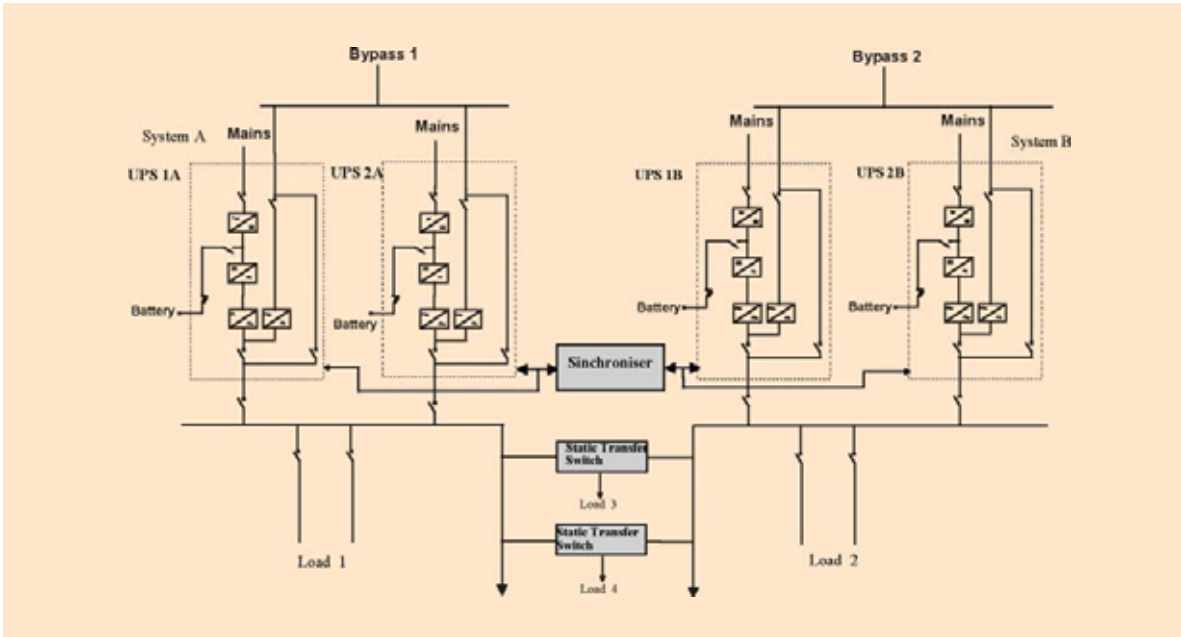


Fig. 2 - Dual bus System

DYNAMIC DUAL BUS SYSTEM

Two independent systems set in Dual Bus Configuration can be merged together at any time for system expansion or maintenance thanks to the PSJ (Parallel System Joiner) option. This provides a lot of flexibility in your installation in case of maintenance or when it is necessary to change the redundancy level of both systems.

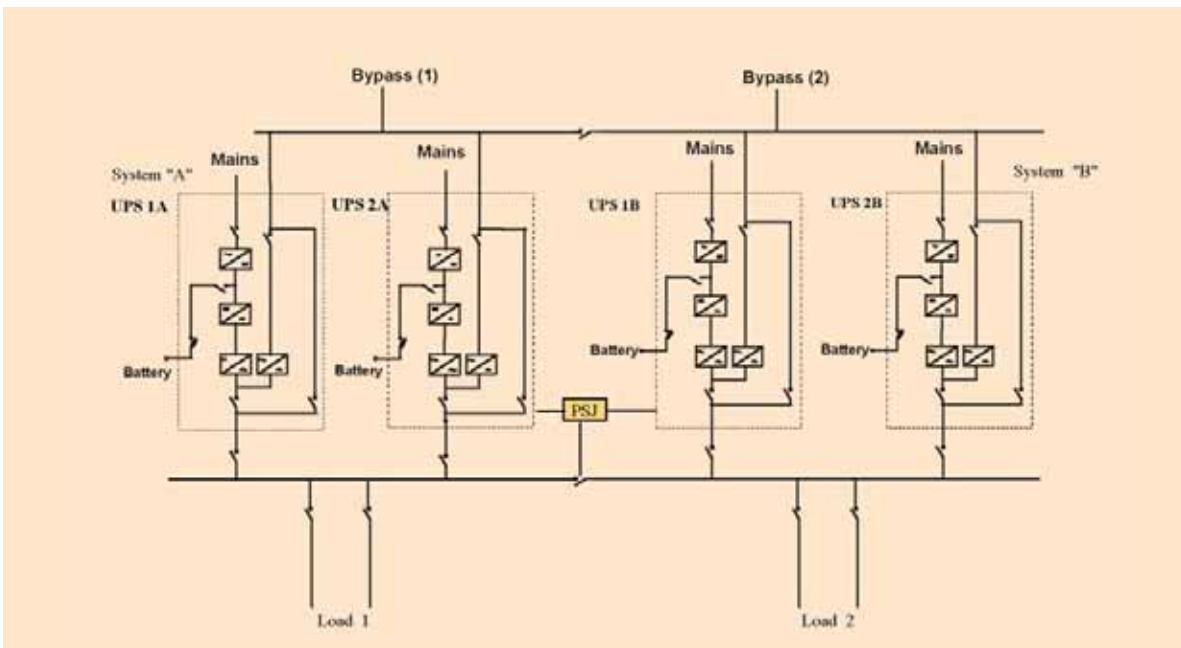


Fig. 3 - Dynamic Dual Bus System

Sentry MPS

Three-phase input
Three-phase output

Technical data

Models	MPS 100	MPS 120	MPS 160	MPS 200
Power (kVA)	100	120	160	200

Input	MPS 100	MPS 120	MPS 160	MPS 200
Nominal voltage	380 - 400 - 415 Vac three-phase			
Voltage tolerance	400 V ± 20%			
Frequency	45 ÷ 65 Hz			
Soft start	0 ÷ 100% in 30" configurable			
Permitted frequency tolerance	± 2% (selectable from ± 1% to ± 5% from the front panel)			
Standard features	Back Feed protection; separable bypass line			

Battery	MPS 100	MPS 120	MPS 160	MPS 200
Type	Lead, open vase acid and VRLA, AGM / GEL; NiCd			
AC ripple current	Zero			
Temperature compensation	-0,5 Vx °C			

Output	MPS 100	MPS 120	MPS 160	MPS 200
Rated power (kVA)	100	120	160	200
Active power with load PF from 0,9 cap. to 0,8 ind. (kW)	80	96	128	160
Number of phases	3 + N			
Nominal voltage	380 - 400 - 415Vac three-phase + N			
Static stability	± 1%			
Dynamic stability	± 5% in 10 msec.			
Voltage distortion with linear load	≤1%			
Voltage distortion with non linear load	≤3%			
Frequency	50 or 60 Hz configurable			
Waveform	Sinusoidal			
Crest factor (Ipeak/Ipms)	3:1			
Overload	110% for 60'; 125% for 10'; 150% for 1'			

System	MPS 100	MPS 120	MPS 160	MPS 200
Remote signalling	Voltage-free contacts (configurable)			
Remote commands	EPO and bypass			
Communication	Double RS232 + remote contacts + 2 communication interface slots			
Efficiency Smart Mode	Up to 98%			
Dimensions (wdh) (mm)	800x800x1900			
Weight (kg)	640	650	770	810
Noise level	63 ÷ 68 dBA a 1 m			
Operating temperature	0 °C / +40 °C			
Relative humidity	<95% non condensing			
Protection degree	IP20			
Colour	Light grey (RAL 7035)			
Compliance	European Directives: L V 2006/95/EC Low voltage directive EMC 2004/108/EC Electromagnetic compatibility directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification according to IEC 62040-3 (Voltage Frequency Independent) VFI - SS - 111			

Sentry MPS

Three-phase input
Three-phase output

Technical data

Models	MPS 300	MPS 400	MPS 500	MPS 600	MPS 800
Power (kVA)	300	400	500	600	800

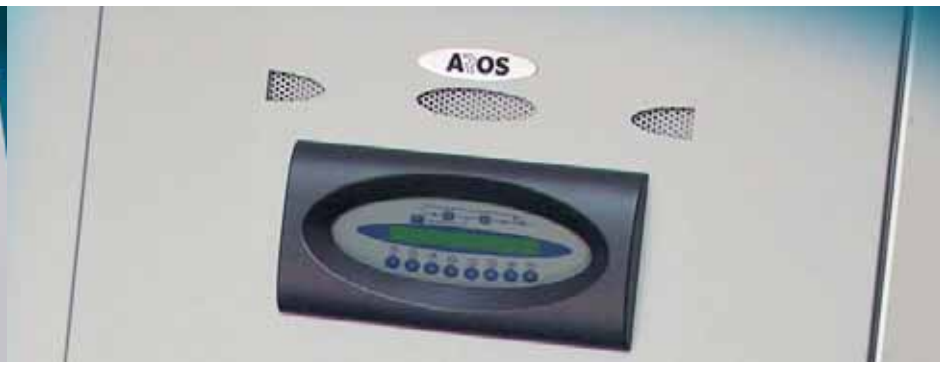
Input	MPS 300	MPS 400	MPS 500	MPS 600	MPS 800
Nominal voltage	380 - 400 - 415 Vac three-phase				
Voltage tolerance	400 V ± 20%				
Frequency	45 ÷ 65 Hz				
Power factor	>0.95 in the Sinus version		>0.93 in the Sinus version		
Current harmonic distortion	<3% in the Sinus version				
Soft start	0 ÷ 100% in 30" configurable				
Permitted frequency tolerance	± 2% (selectable from ± 1% to ± 5% from the front panel)				
Standard features	Back Feed protection; separable bypass line				

Battery	MPS 300	MPS 400	MPS 500	MPS 600	MPS 800
Type	Lead, open vase acid and VRLA, AGM / GEL; NiCd				
AC ripple current	<1%				
Temperature compensation	-0,5 Vx °C				

Output	MPS 300	MPS 400	MPS 500	MPS 600	MPS 800
Rated power (kVA)	300	400	500	600	800
Active power with load PF from 0,9 cap. to 0,8 ind. (kW)	240	320	400	480	640
Number of phases	3 + N				
Nominal voltage	380 - 400 - 415 Vac three-phase + N				
Static stability	± 1%				
Dynamic stability	± 5% in 10 msec.				
Voltage distortion with linear load	≤1%				
Voltage distortion with non linear load	≤3%				
Frequency	50 or 60 Hz configurable				
Waveform	Sinusoidal				
Crest factor (Ipeak/Ipms)	3:1				
Overload	110% for 60'; 125% for 10'; 150% for 1'				

System	MPS 300	MPS 400	MPS 500	MPS 600	MPS 800
Remote signalling	Voltage-free contacts (configurable)				
Remote commands	EPO and bypass				
Communication	Double RS232 + remote contacts + 2 communication interface slots				
Efficiency Smart Mode	Up to 98%				
Dimensions (wdh) (mm)	1630x850x1900	1630x1000x1900	3200x980x1900		440x1000x1900
Weight (kg)	2200	2600	3600	4000	5300
Noise level	<70 dBA at 1 m		<77 dBA at 1 m		<80 dBA at 1 m
Operating temperature	0 °C / +40 °C				
Relative humidity	<95% non condensing				
Protection degree	IP20				
Colour	Light grey (RAL 7035)				
Compliance	European Directives: L V 2006/95/EC Low voltage directive EMC 2004/108/EC Electromagnetic compatibility directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2 C2 Classification according to IEC 62040-3 (Voltage Frequency Independent) VFI - SS - 111				

Sentry MPS-HP



ABSOLUTE PROTECTION

Thanks to the double conversion on-line technology achieved entirely with IGBT and DSP (Digital Signal Processor) control, the Sentry MPS-HP series guarantees maximum protection as well as high quality power for any type of IT and industrial load. It is especially suited for mission critical applications and is classed VFI SS 111 (Voltage and Frequency Independent) in compliance with IEC EN 62040-3 standards.
This series, available in 100 to 250kVA models, has been designed using a new configuration that includes an IGBT rectifier with sinusoidal input current in place of the traditional thyristor rectifier.

ZERO IMPACT SOURCE

Sentry MPS-HP is a further evolution of the Sentry MPS series with the added advantages offered by an IGBT-based rectifier assembly. This feature further reduces the impact of the UPS on the local supply and simplifies installation where there is limited power capacity in the form of available electrical supply rating or generator size. Sentry MPS-HP is classed as a "Zero Impact Source" and provides:

- low input current distortion – less than 2,5%
- high input power factor 0.99
- power walk-in function that ensures progressive rectifier start up
- delayed start up phased with the return of mains power supply, when several UPS are connected in the system.

Sentry MPS-HP also performs the role of a high performance filter, protecting its upstream power supply sources from any harmonics and reactive power generated by the loads powered.

BATTERY CARE SYSTEM

Sentry MPS-HP uses the Battery Care System, also available on the traditional Sentry MPS models, which optimises battery performance in order to extend the battery life for as long as possible.

FLEXIBILITY

Sentry MPS-HP models feature an output transformer with galvanic isolation (between the load and the battery supply) to provide greater versatility and installation options. The UPS can be supplied from two separated power sources (mains power and a second emergency standby source) which can help increase the resilience of parallel system configurations.

MAIN CHARACTERISTICS

- Efficiency up to 98%;
- Compact footprint: only 0.85 m^2 for the 250kVA UPS model;
- Reduced weight;
- Double electronic and galvanic protection of the load from the battery.

The entire Sentry MPS-HP range is suitable for a wide range of applications thanks to the flexibility of the configurations, accessories and options and choice of performance levels: compatible with capacitive loads, such as blade servers, without any reduction in active power, ranging from 0.9 lead to 0.8 lag and up to 0.8 capacitive power with a low derating equal to 15% of the active power (kW). Efficient and reliable power supply for mission critical applications is guaranteed by operating in redundancy and power parallel mode with up to 8 units (N+1), and by the Dual Bus System and Dynamic Dual Bus system configurations.

APPLICATIONS

- Servers
- Local Area Network (LAN)
- Data centers
- Telecommunications
- Industrial equipment
- Electro-medical equipment

Details of the connection

OPTIONS

Isolation transformer
Synchroniser device (UGS)
Parallel Systems Joiner device (PSJ)
Interface for generator set
Closed Loop kit (to be ordered with the UPS)
Empty battery cabinets or cabinets for extended runtime

Sentry MPS-HP

Three-phase input
Three-phase output

Technical data

Models	MPS-HP 100	MPS-HP 120	MPS-HP 160	MPS-HP 200	MPS-HP 250
Power (kVA)	100	120	160	200	250

Input	MPS-HP 100	MPS-HP 120	MPS-HP 160	MPS-HP 200	MPS-HP 250
Nominal voltage	380 - 400 - 415 Vac three-phase				
Range acceptable without battery intervention	300 ÷ 480 Vac				
Frequency	45 ÷ 65 Hz				
Power factor	>0.99				
Current harmonic distortion	<2.5% THDi				
Soft start	0 ÷ 100% in 30" (selectable)				
Permitted frequency tolerance	± 2% (selectable from ± 1% to ± 5% from the front panel)				
Standard features	Back Feed protection; separable bypass line				

Battery	MPS-HP 100	MPS-HP 120	MPS-HP 160	MPS-HP 200	MPS-HP 250
Type	Free lead-acid, and VRLA AGM / GEL; NiCd				
AC ripple current	Zero				
Temperature compensation	-0,5 Vx °C				

Output	MPS-HP 100	MPS-HP 120	MPS-HP 160	MPS-HP 200	MPS-HP 250
Rated power (kVA)	100	120	160	200	250
Active power with load PF from 0,9 cap. to 0,8 ind. (kW)	80	96	128	160	200
Number of phases	3 + N				
Nominal voltage	380 - 400 - 415 Vac three-phase + N				
Static stability	± 1%				
Dynamic stability	± 5% in 10 msec.				
Voltage distortion with linear load	≤1%				
Voltage distortion with non linear load	≤3%				
Frequency stability on battery	0.05%				
Frequency	50 or 60 Hz (selectable)				
Overload	110% for 60'; 125% for 10'; 150% for 1'				

System	MPS-HP 100	MPS-HP 120	MPS-HP 160	MPS-HP 200	MPS-HP 250
Remote signalling	Voltage-free contacts (configurable)				
Remote commands	EPO and bypass (configurable)				
Communication	Double RS232 + remote contacts + 2 slots for communication interface				
Efficiency Smart Mode	Up to 98%				
Dimensions (wdh) (mm)	800x850x1900		1000x850x1900		
Weight (kg)	656	700	800	910	1000
Noise level	63 ÷ 68 dBA at 1 m				
Operating temperature	0 °C ÷ +40 °C				
Relative humidity	<95% non condensing				
Protection degree	IP20 (others on request)				
Colour	Light grey (RAL 7035)				
Compliance	Safety: EN 62040-1-1 (directive 2006/95/EC); EMC: EN 62040-2 (directive 2004/108/EC)				
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111				

AROS

Sentry MPS
Single-phase output

PROTECTION FOR INDUSTRIAL APPLICATION

MPS 1Ph is an on-line double conversion UPS (VFI SS 111 in accordance with IEC EN 62040-3) with transformers isolated inverter and rectifier. MPS 1Ph has a compact foot print and high quality output to provide the ultimate power protection for industrial applications:
industrial processes, petrochemical, power plant, energy etc.

INDUSTRIAL ENVIRONMENT

MPS 1Ph is suitable for severe installation environments such as petrochemical manufacturing sites, where the operating conditions (levels of vibration, mechanical stress, ambient temperatures and dust ingress) require a more robust and industrialized UPS design to those installed within, for example, data centres.

HIGH Icc

A high short-circuit current (Icc = 3 In) making the UPS suitable for loads with high current peaks; during switch-on or a load step-change.

220V DC VOLTAGE

An input transformer and isolated inverter to protect the 220Vdc bus bar (from 108 to 114 blocks), the recognised industrial standard.

REDUNDANT VENTILATION

100% redundant ventilation with 50% fan loading at nominal load and each fan monitored for breakdown or failure.

MINIMUM IMPACT ON SUPPLIES - EASY SOURCE

MPS 1Ph technology removes the problems of over sizing upstream power sources, whilst improving load power factors and current harmonics. The UPS features the latest input current absorption techniques including progressive rectifier start-up and the option to reduce battery charging currents. These features make MPS 1Ph one of the most generator compatible and environmentally friendly UPS available.

BATTERY CARE SYSTEM: MAXIMUM LIFETIME POTENTIAL

Traditionally, when a mains supply is present the UPS charges its batteries. Battery power is used for the inverter should the input supply fail. Efficient battery management and care is therefore essential to the overall performance of the UPS in an emergency. The MPS 1Ph Battery Care System consists of a range of features designed to provide optimum performance and enhanced operating life:

- Dual level charging regime to optimise recharge currents and lower recharge times
- Temperature compensation and deep discharge protection to reduce overall battery aging
- Charge blocking system to reduce electrolyte consumption and lengthen the life of VRLA batteries
- Predictive battery testing to spot potential battery deterioration and failure

MPS 1Ph is also compatible with different battery technologies: open-vase lead acid and AGM and Gel VRLA, NiCd.

FLEXIBILITY

With a broad range of accessories and options, complex configurations and system architectures can be achieved to guarantee maximum power availability and the option to add new UPS without interruption to existing users. Using the Aros UPS Group Synchroniser (USG) and Parallel Systems Joiner (PSJ) sophisticated inter group parallel and redundant systems can be achieved to provide the highest possible levels of resilience and availability.

ADVANCED COMMUNICATION

- Compatible with TeleNetGuard for remote maintenance
- Advanced, multi-platform communication for all operating systems and network environments: Watch&Save 3000 monitoring and shut-down software included, for Windows 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems
- The UPS is supplied with a cable for direct connection to the PC (Plug and Play)
- RS232 double serial port
- Installation slot for an Emergency Power Off (EPO) interface to allow the UPS to be switched off remotely in an emergency.
- Remote mimic panel (LED or LCD)
- Generator interface: enables desynchronisation of the UPS output from a generator supply which may be subject to phase and frequency variations. The interface also enables more economic use of the battery charger.

Sentry MPS

Three-phase input
Single-phase output

Technical data

Models	MPM 30	MPM 40	MPM 60	MPM 80
Power (kVA)	30	40	60	80

Input	MPM 30	MPM 40	MPM 60	MPM 80
Nominal voltage	380 - 400 - 415 Vac three-phase			
Voltage tolerance	400 V ± 20%			
Frequency	45 ÷ 65 Hz			
Power factor	≥0.93			
Current harmonic distortion	<5% C			
Soft start	0 ÷ 100% in 120" configurable			
Permitted frequency tolerance	± 2% (selectable from ± 1% to ± 5% from the front panel)			
Standard features	Back Feed protection; separable bypass line			

Battery	MPM 30	MPM 40	MPM 60	MPM 80
Number of cells	108 ÷ 114			
Max Vdc	274 V			
Temperature compensation	-0,5 Vx °C			

Output	MPM 30	MPM 40	MPM 60	MPM 80
Rated power (kVA)	30	40	60	80
Active power (kW)	24	32	48	64
Nominal voltage	230Vac single-phase			
Static stability	± 1%			
Dynamic stability	± 5%			
Voltage distortion with linear load	<1%			
Voltage distortion with non linear load	<3%			
Frequency	50 or 60 Hz configurable			
Crest factor (Ipeak/Ipms)	3:1			
Overload	110% for 60'; 125% for 10'; 150% for 1'			
Short circuit current	3 I nom.			

System	MPM 30	MPM 40	MPM 60	MPM 80
Remote signalling	Voltage-free contacts			
Remote commands	EPO and bypass			
Communication	Double RS232 + remote contacts + 2 communication interface slots			
Efficiency	Up to 94%			
Dimensions (wdh) (mm)	800x800x1900		1600x800x1900	
Weight (kg)	850	900	1400	1500
Noise level	63 ÷ 68 dBA a 1 m			
Ventilation	Redundant fans			
Operating temperature	0 °C / +40 °C			
Relative humidity	<95% non condensing			
Protection degree	IP20			
Colour	Light grey (RAL 7035)			
Compliance	Safety: EN 62040-1-1 (Directive 2006/95/EC); EMC: EN 62040-2 (Directive 2004/108/EC)			
Classification as per IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111			

Sentry MPS FC 400 Hz Frequency Converter

Sentry MPS FC series is a frequency converter based on the Sentry MPS UPS that can accept 50/60Hz and deliver a 400Hz output.
The device has a double conversion design (VFI SS 111 compliant with IEC EN 62040-3) with a transformer-isolated Inverter.
The output voltage is 208 Vac and configurable at 200Vac on site with a 115 Vac version available on request.
The basic design is a solid state generator with IGBT- based Inverter controlled using PWM techniques.

It is ideal for applications such as avionic repair workshops, hangars, aircraft ground power in civil airports and military bases.

MINIMUM IMPACT ON POWER SUPPLY – EASY SOURCES

Sentry MPS FC technology removes problems of over sizing upstream power sources, whilst improving load power factors and current harmonics.
The UPS features the latest input current absorption techniques including progressive rectifier start-up and the option to reduce battery charging currents. These features make Sentry MPS FC one of the most generator-compatible and environmentally friendly frequency converters on the market.

EASY TO INSTALL

Sentry MPS FC is compact with a foot print of only 0.64m2. Front access to internal assemblies and top panel ventilation make space allocation within confined data processing or plant room easy. Sentry MPS FC can be placed against a wall as there is no requirement for rear or side panel access for maintenance or ventilation.

APPLICATIONS

- Aircraft ground power
- Airports
- Navy
- Military equipment
- Testing laboratories

The Easy Source input, the Battery Care System as well as the flexibility and communication features are the same as those offered on the traditional Sentry MPS series.

OPTIONS

- Input Isolation transformer
- 2 programmable relay cards
- Protection degrees higher than IP20
- LED remote status panel
- LCD based remote Control panel
- Remote Graphics Panel

Sentry MPS FC

Three-phase input
Single-phase output

Technical data

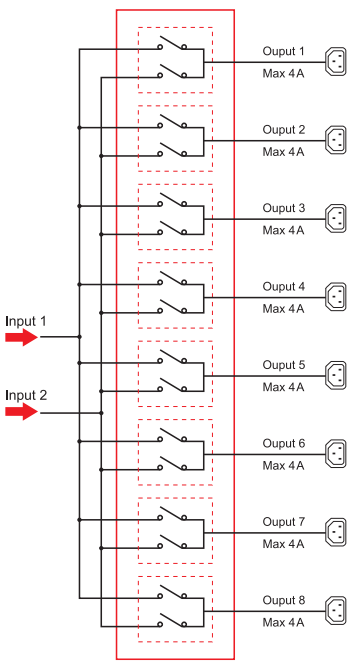
Models	MFC400-30	MFC400-60	MFC400-80	MFC400-100	MFC400-120
Power (kVA)	30	60	80	100	120

Input	MFC400-30	MFC400-60	MFC400-80	MFC400-100	MFC400-120
Nominal voltage	380 - 400 - 415 Vac three-phase				
Voltage tolerance	400 V ± 20%				
Frequency	45 ÷ 65 Hz				
Power factor	≥0.93 (in the Plus version)				
Current harmonic distortion (THDi)	<5% (in the Plus version)				
Soft start	0 ÷ 100% in 120" configurable				

Output	MFC400-30	MFC400-60	MFC400-80	MFC400-100	MFC400-120
Rated power (kVA)	30	60	80	100	120
Active power (kW)	24	48	64	80	96
Nominal voltage	208Vac 3Ph + N (settable 200 V)				
Static stability	± 1%				
Dynamic stability	± 5%				
Voltage distortion with linear load	<3%				
Voltage distortion with non linear load	<4%				
Frequency	400 Hz				
Crest factor (Ipeak/Ipms)	3:1				
Overload	110% for 60'; 125% for 10'; 150% for 1'				

System	MFC400-30	MFC400-60	MFC400-80	MFC400-100	MFC400-120
Remote signalling	Voltage-free contacts				
Remote commands	EPO and ON/OFF				
Communication	Double RS232 + remote contacts + 2 communication interface slots				
Efficiency	Up to 92%				
Dimensions (wdh) (mm)	550x740x1200	800x800x1900			
Weight (kg)	330	480	500	530	560
Noise level	61 to 63 dBA at 1 m				
Operating temperature	0 °C to 40 °C (50°C @ 75% load)				
Relative humidity	<95% non condensing				
Protection degree	IP20				
Colour	Light grey (RAL 7035)				
Compliance	Safety: EN 62040-1-1 (Directive 2006/95/EC); EMC: EN 62040-2 (Directive 2004/108/EC)				
Classification as per IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111				

IRMS (Intelligent Redundant Multi-Switch)



Multi-Switch is a rackmount source transfer switch that can supply up to eight loads from two AC power sources. Should one source fails, the other automatically powers the load. The sources can be two separate AC sources including mains power and UPS, or a combination of the two.

PRINCIPLE OF OPERATION

The IRMS provides electrical distribution and remote management for up to eight network users, powered from two direct mains supplies or UPS or a combination of both.
The Multi-SWITCH can connect each user (up to eight, each with a maximum power demand not greater than 4A), to either of the two power sources (1 and 2). Load demand is shown on the LCD.
See “principle of operation” diagram.

PROTECTION AGAINST POWER SUPPLY FAILURES

If one of the two power source fails or falls outside specification, IRMS will transfer the connected loads to the second power source (switching is instantaneous even if the two sources are not in phase).

PROTECTION AGAINST LOAD FAULTS

If a fault occurs with one of the loads (for example due to a shortcircuit or overload), IRMS will disconnect the load to prevent disruption to the others. IRMS protects sensitive installations from both power and hardware faults.

CHARACTERISTICS

- Full protection against mains failures and load faults
- Flexible power sources: IRMS can be powered from 2 different sources (2 mains supplies, 2 UPS or a combination of both. Note than the UPS can be of a different size)
- Designed for installation in a 19” rack-mount cabinet
- LCD to provide measurements/alarms/states information
- Management software included
- Remote monitoring serial interface
- No signal connection is required between Multi-SWITCH and the power sources or supplied hardware
- Configuration software provided as standard
- Slot-in SNMP network adapter card

IRMS Multi-Switch

2 inputs
8 outputs

Technical data

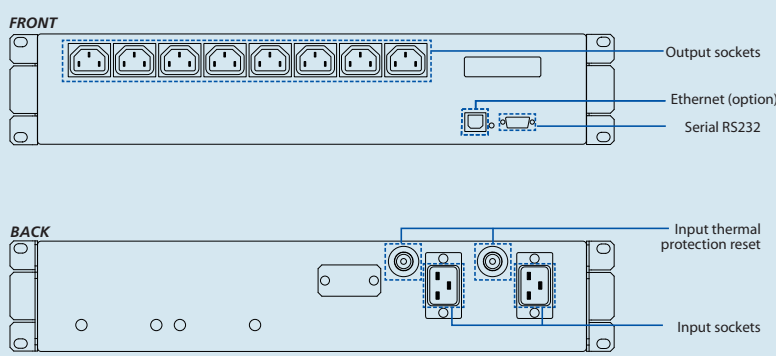
Models	Multi-Switch (2 inputs – 8 outputs)
Power	8x4A output sockets

Input	Multi-Switch (2 inputs – 8 outputs)
Input voltage	180 - 276 Vac
Rated frequency	50/60 Hz
Maximum load for each input (A)	16
Input sockets	2 IEC 320 (16A)

Output	Multi-Switch (2 inputs – 8 outputs)
Output voltage	Selection of one of the two input sources
Maximum load for each output (A)	4
Output sockets	8 IEC 320 10A

Environmental	Multi-Switch (2 inputs – 8 outputs)
Weight (kg)	10
Dimensions (wdh) (mm)	19"x360x2U
Operating temperature	0 °C / +40 °C
Relative humidity	< 95% non condensing
Protection	Overcurrent - overvoltage - undervoltage - back-feed protection
Safety compliance	EN 62040-1 EMC EN 62040-2 Directives 2006/95/EC - 2004/108/EC EN 62040-3
Maximum altitude	3000 m
Maximum altitude (storage conditions)	6000 m; 45 °C
Communication	RS232
Enclosure protection rating	IP 20
Colour	Dark grey (RAL 5004)
Noise	<35 dBA at 1 m

Details



Static Transfer Switch (STS)
Sentry STS

Sentry STS is a static transfer switch commonly used within power continuity applications to improve resilience. The system can be used in conjuction with UPS or as separate standalone devices.

OPERATING PRINCIPLE

Sentry STS adds a source of redundancy to a critical installation and automatically transfers the connected load between two separate AC power sources. The transfer can be automatic when an input power supply fails outside set tolerances or be manually forced using the front panel keypad or remotely via a communications network.

PROTECTION AGAINST POWER FAILURES

In the event that one of the two power sources does not return to the accepted tolerance values, the Sentry STS will transfer the other loads over to the second power source (this happens instantly if the two sources are in phase).

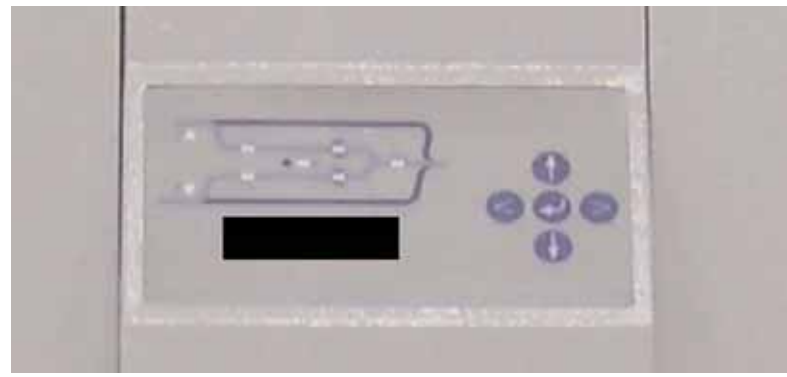
PROTECTION AGAINST ENVIRONMENTAL DISTURBANCES OVERLOADS AND LOAD FAULTS

In the event of an overload or fault condition, the internal protection system within the STS device can be configured to disconnect power at defined levels. In the extreme situation of a downstream short circuit, Sentry STS can disconnect the load to prevent disruption.

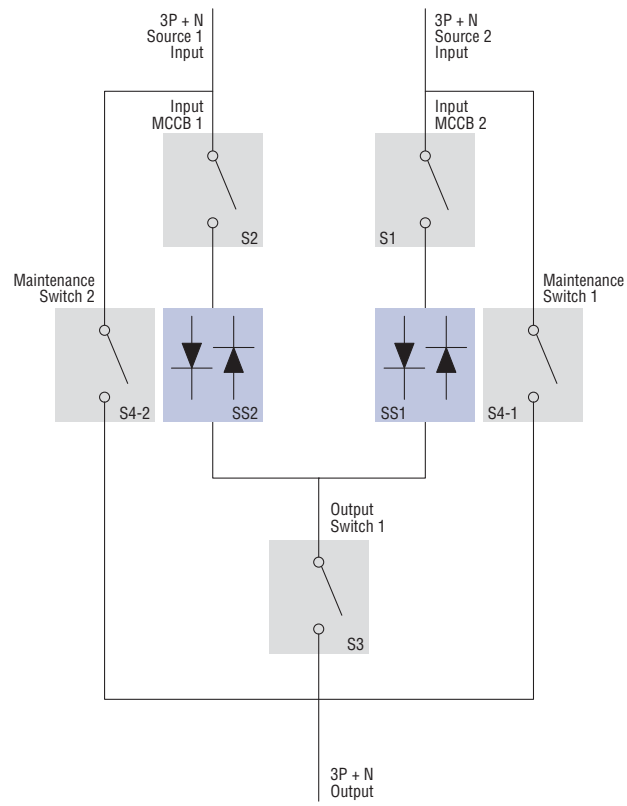
CHARACTERISTICS

- Full protection of critical industrial and IT applications against power failures and faults on the load.
- Full microprocessor control which guarantees:
  - fast and safe transfer between the power sources;
  - monitoring of all parameters on the LCD display;
  - constant control of the SCRs;
  - remote advanced diagnostics (RS232 and TCP/IP).
- Redundant power circuits:
  - power is supplied to the internal logic by two separate and independent power circuits that are hot swappable so as to ensure no break in the supply to the loads;
  - in the event that the power supplied by both sources fails, full system operation is guaranteed by the Power Supply Backup function that provides backup power to the circuits from an external, independent standby power source.

LED	FUNCTION
L1	S1 Priority source
L2	S2 Priority source
L3	S1 Present
L4	S2 Present
L5	Static Switch SS1 closed
L6	Static Switch SS2 closed
L7	Alarm indicator
L8	Output selection ON/OFF
5 function keys and LCD operations	

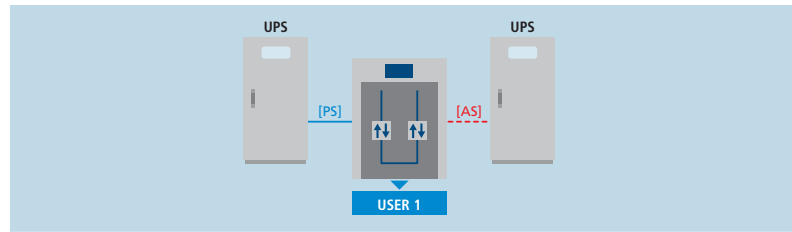


- High protection:
  - in the event of an output short circuit, Sentry STS will block the transfer between the two power sources eliminating the risk of propagating the short circuit and its effects on the other loads;
  - a back-feed control circuit will trigger automatic protection devices to avoid energy feeding back to one of the inputs of the Sentry STS;
  - Sentry STS has double redundant ventilation called "fan redundancy plus". Thanks to this function, in the remote possibility that two fans both fail at the same time, the others would still be able to dissipate the heat generated by a nominal load at a temperature of up to 40°C.
  The fans can be hot swapped so as to ensure no break in system operation during the repair.
- Easy front access:
  - power cable connections are easily accessed with entry from below;
  - board slots are positioned in a dedicated area to allow rapid diagnosis/replacement;
  - all parts subject to controls, maintenance and/or replacement.



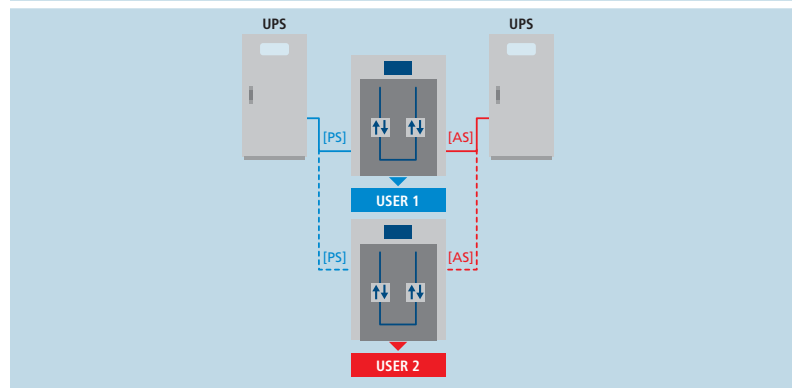
Sentry STS in REDUNDANT Mode

The reliable secondary source [AS] will power the load only and exclusively when the primary source (PS) fails, so as to guarantee maximum redundancy and quality of the power supply to the loads.



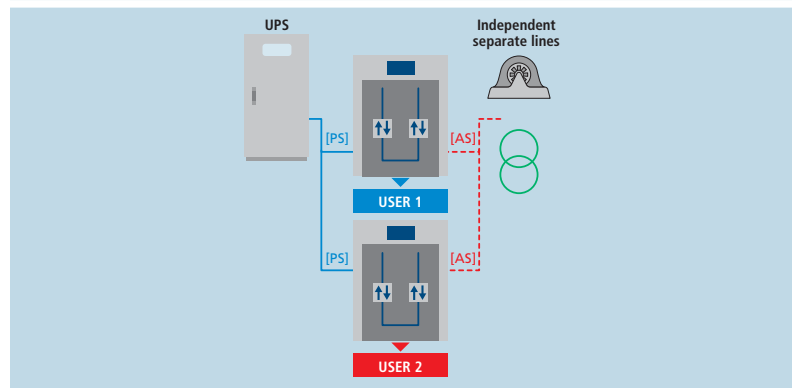
Sentry STS in CROSS FEEDING Mode

The two sources power a number of critical loads using the Sentry STS configured in such a way as to make one of the two power sources the priority source (PS). In cases of power faults or failure on one of the two sources, the other one will be able to supply power to all the loads connected to the system.

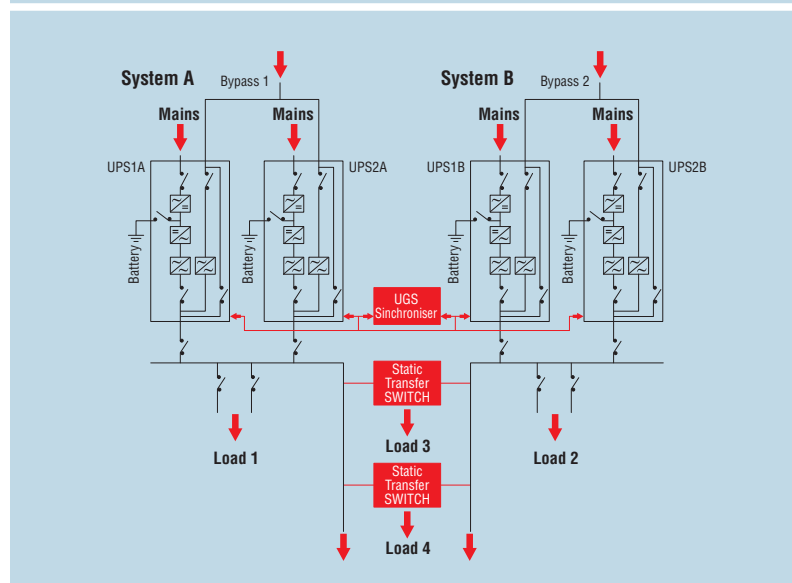


Sentry STS in BACK UP Mode

Sentry STS powers a number of loads using the priority source (PS). The secondary source (AS) is formed by independent and separate sources which can supply standby power should the priority source (PS) fail suddenly.



The solution offered by AROS guarantees maximum reliability and ensures no break power supply in all operating conditions thanks to the UGS option that keeps the two systems A and B perfectly synchronised.
The flexibility of the UGS system is able to guarantee that the power sources remain synchronised even when one of the two systems is not AROS UPS model but made by another manufacturer or when the input sources are not UPS's.



Technical data

Models (1)	STS 100-X	STS 150-X	STS 200-X	STS 250-X	STS 300-X	STS 400-X
Nominal current (A)	100	150	200	250	300	400

Input	STS 100-X	STS 150-X	STS 200-X	STS 250-X	STS 300-X	STS 400-X
Nominal voltage - sources S1/S2	380 - 400 - 415 Vac 3-phases with neutral					
Input voltage tolerance	180÷264 Vac (selectable)					
Switched input phases	3+N (4-pole) - 3 (3-pole)					
Nominal frequency	50/60 Hz					
Input frequency tolerance	+/-10% (selectable)					
Distribution compatibility	IT, TT, TNS, TNC					

Opereting features	STS 100-X	STS 150-X	STS 200-X	STS 250-X	STS 300-X	STS 400-X
Transfer typology	"Break Before Make" (no sources overlapping)					
Available transfer modes	Automatic / Manual / Remote					
Transfer time for source failure	< 4 msec (S1/S2 synchronised) 10 msec (S1/S2 not synchronised)					

System	STS 100-X	STS 150-X	STS 200-X	STS 250-X	STS 300-X	STS 400-X
Weight (kg)	155	175	205	210	220	240
Dimensions (wdh) (mm)	685x530x1500		685x580x1770			
Efficiency at full load (%)	> 99					
Noise level at 1 m from front (from 0 to full load) - (dBA)	52		55			
Storage temperature range	-10°C to +50°C					
Ambient temperature	0°C ÷ +40°C					
Relative humidity	90% non-condensing					
Max. Installation height	1000 m at rated power (-1% power for every 100 m above 1000 m) - Max 4000 m					
Standard compatibility	EN 62310-1 (safety) EN 62310-2 (electromagnetic compatibility)					
Colour Light grey	RAL 7035					
Index of protection	IP 20					

(1) X= 3 in cases of 3-pole switching (3 phases) ; X=4 in cases of 4-pole switching (3 phases + Neutral)

Software and accessories for total reliability in controls and communication

Watch&Save 3000 - Communication software

Watch&Save 3000 provides efficient, user-friendly UPS management using bar chart displays to show major operational information such as the input voltage, UPS load % and batteries charge %. The software also provides detailed information on fault conditions and UPS operating characteristics. Watch&Save 3000 has been developed with a client/server architecture that makes it flexible and easy to use, and provides multi-lingual and on-line support.

Watch&Save 3000 provides detailed graphical displays.

A standard screen displays information on the load, batteries status, alarms etc.

CHARACTERISTICS

- Sequential and priority-based shutdown: Watch&Save 3000 provides unattended shut-down of single and networked PCs, saving any active work and the most widely used applications Windows. Users can define their own shutdown procedures and establish the order in which critical computers (such as servers) are to be powered down.

- Multi-platform compatibility: Watch&Save 3000 uses the TCP/IP communications protocol to achieve standardised management and monitoring across the widest possible range of platforms. This makes it possible to monitor computers with different operating systems from a single console, for example monitoring a UNIX server from a PC with Windows and also connecting to UPS located in different geographical areas using dedicated networks (intranets) or the Internet.

- Event scheduling: Watch&Save 3000 users can program their own shutdown procedures, detailing power-off and power-up scenarios to increase system safety and, equally important, power economy.

- Messages management: Watch&Save 3000 keeps users constantly informed about the status of their local and network UPS. A list can be defined of users who should receive e-mail messages, faxes and SMS when faults or sudden blackouts occur.

- Integrated SNMP agent: Watch&Save 3000 features an integrated SNMP agent for management of the UPS. This agent is able to send all the UPS information and generate traps using the RFC 1628 MIB standard. This makes it possible to manage the UPS in compatible SNMP management stations such as HP Open View, Novell Managewise and IBM NetView.

- Wap server integrated: Watch&Save 3000 allows the user to monitor a UPS through WAP mobile phone.

- Security, easy to use and connect, communication is password protected to ensure UPS system security. Using the new discovery/browsing function, all the AROS UPS connected to a protected computer or LAN can be displayed in a list format. In the absence of a LAN connection, support is provided for modem-based communication.

Software and accessories for total reliability in controls and communication

Watch&Save 3000 - Communication software

GRAPHIC MONITORING OF UPS AND ENVIRONMENTAL SENSORS STATUS

Watch&Save 3000 is a simple but powerful AROS UPS management tool. There are various graphic versions for all the operating systems.

DETAILED UPS PARAMETER DISPLAY AND ENVIRONMENTAL SENSORS

Watch&Save 3000 provides all the information required for first level diagnostics.

EVENTS LOG AND GRAPHICAL DISPLAY

All changes in UPS operating status are logged and displayed in a graphical format from which the user can monitor trends in the mains electrical parameters monitored.

PROGRAMMING OF UPS PARAMETERS

The user can select several options remotely: turn the UPS on or off, restart after a power loss and instigate a battery test.

GRAPHIC MONITORING OF UPS STATUS VERSION FOR MAC OS X

AROS Watch&Save 3000 software is the only UPS control and shut-down software running under Macintosh with a client-server cross platform architecture.
It allows integration in TCP/IP networks with Windows, Novell, IBM OS/2 and the most widely used UNIX operating systems. Watch&Save 3000 supports the NetMan Plus series of network agents and provides multi-language support.

BLOCK AND FUNCTIONAL DIAGRAMS

Watch&Save 3000 also displays the UPS in block format providing the user with information regarding operating status.

NOTIFICATION OF ALARMS VIA E-MAIL, SMS, FAX AND VOICE

Watch&Save 3000 can be configured to forward alarm messages automatically via e-mail, SMS, fax and voice.

All information can be displayed in block format.

Operating systems supported

- Windows 98, Me, NT 4.0, 2000, 2003, XP, Vista 2008 Server on processors X86,X86_64 e IA64
- Linux on processors X86, X86_64 e IA64
- Novell Netware 3.x, 4.x, 5.x, 6
- Mac OS X
- The most widely used UNIX operating systems such as: IBM AIX, HP, SUN Solaris INTEL and SPARC, SCO Unixware and Open Server, Silicon Graphics IRIX, Compaq Tru64 UNIX and DEC UNIX, Open BSD UNIX and FreeBSD UNIX, NCR UNIX
- HP OPEN VMS

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Software and accessories for total reliability in controls and communication

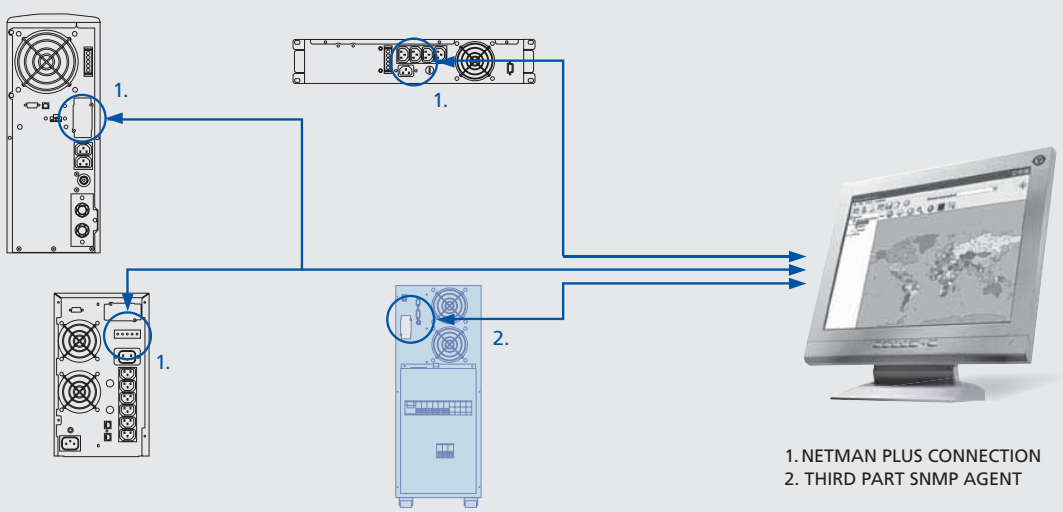
PowerNetGuard - Supervision software

PowerNetGuard software centralises UPS management using network interface (SNMP) communications. It is ideal for Data Centre managers and medium to large sized networks. PowerNetGuard uses the RFC1628 standard Management Information Base (MIB) and ensures standardised UPS management wherever they are located.

CHARACTERISTICS

- Centralised control of remote UPS via Ethernet with SNMP protocol
- Multiple-level display of geographical areas, building plans, maps, etc.
- Multi-user access with various levels of security
- Compatible with NetMan Plus and RFC1628 standard network interface (SNMP)
- Graphs of physical input and output values stored and backed up to file
- Alarm notification via e-mail and SMS
- Wap Server
- Operating systems supported: Windows (98, ME, NT, 2000, 2003, XP and Vista), Linux, MacOSX, Solaris 8, 9 and 10 and Silicon Graphics IR

Centralized control of remote UPS



1. NETMAN PLUS CONNECTION
2. THIRD PART SNMP AGENT

Software and accessories for total reliability in controls and communication

NetMan 101/102 Plus - Network agent

The NetMan Plus network agent allows UPS management across a LAN using any of the main network communication protocols - TCP/IP, HTTP and network interface (SNMP).
NetMan Plus enabled UPS integrate easily into medium and large sized networks and provide reliable communications between the UPS and management systems employed.

NetMan 101 Plus

CHARACTERISTICS

- Configured via TELNET or a serial terminal
- Compatible with Watch&Save 3000 and PowerNETGuard control software
- Supports the network interface (SNMP) standard communication protocol with proprietary RFC 1628 and MIB
- Integrated Web server for browser-based display
- SNMP with RFC 3433 to manage the environmental sensors
- Teleguard modem compatible
- Firmware upgradeable through the serial port
- E-mail sent through SMTP server.

NetMan 101 Plus

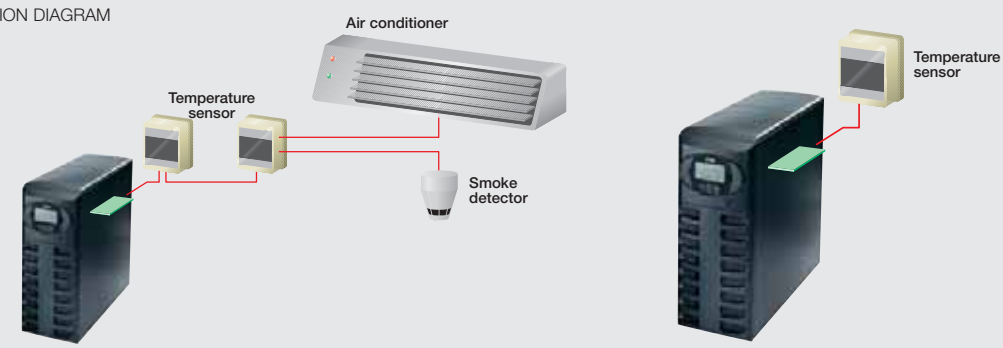
ENVIRONMENTAL SENSORS

The NetMan Plus environmental sensors monitor and record environmental conditions as well as activities in protected areas and at the premises where the UPS is installed. Environmental sensors monitor and record environmental conditions and activities within a designated building area. The sensors provide extensive management and control, triggering cooling fans and locks in response to changes in temperature and humidity. Remote monitoring and control can be provided via internet, SNMP and AROS Watch&Save 3000 software. NetMan Plus can support up to 6 separate sensors. The environmental sensors are easy to install and do not need a separate external power supply.

The following sensors are available:
- Sensor for temperature: -55 +125 °C
- Sensor for temperature: -55 +125 °C and humidity: 0- 100%
- Sensor for temperature: -55 +125 °C and digital I/O: 0-12Vdc. In 1A max out 48Vdc

Environmental sensors

APPLICATION DIAGRAM



Software and accessories for total reliability in controls and communication

MultiCom 301/302 - Protocol converter

The MultiCom 301/302 protocol converter may be used to monitor the UPS using the MODBUS/JBUS protocol on RS485 or RS232 serial lines. It can also manage a second, independent RS232 serial line that can be used to connect other devices such as the Netman Plus 101 or a PC that uses the Watch&Save 3000 software.

CHARACTERISTICS

- Port configuration for MODBUS/JBUS as RS232 or RS485
- Management of two independent serial lines
- Suitable for Building Management System (BMS) integration
- LED communication flow indicators
- Firmware upgradeable through the serial port

MultiCom 301

MultiCom 302

MultiCom 351/352 - Serial link duplexer

The MultiCom 351/352 is a serial duplexer that allows two devices to be connected to a single serial port on a UPS.
It can be used where numerous serial connections and multiple UPS polling are required, and is ideal for LAN networks with a firewall.

CHARACTERISTICS

- Cascading configuration giving a maximum of 4 serial communication ports
- LED communication flow indicators
- Firmware upgradeable through the serial port

MultiCom 351

MultiCom 352

MultiCom 362 - Serial / USB port

MultiCom 362 provides a UPS with an additional RS232 serial interface or USB port. The USB port allows the UPS to communicate with Apple Macintosh computers as well as Windows and Linux operating systems.

CHARACTERISTICS

- Compatible with USB 1 or 2
- Compatible with Watch&Save 3000

MultiCom 362

Software and accessories for total reliability in controls and communication

MultiCom 372 - Serial / ESD port

MultiCom 372 provides a UPS with an additional RS232 serial interface port. The card has Emergency Power Off (EPO) and Remote Shut Down (RSD) inputs with terminal connections.

MultiCom 372

CHARACTERISTICS

- EPO and UPS shutdown interface
- 12Vdc 80mA contact option

MultiCom 382 - Contacts / ESD board

MultiCom 382 provides a set of relay contacts to provide UPS alarm and status indication. The contacts are connected through terminal connections. Signal contacts include Emergency Power Off (EPO), Remote Shut Down (RSD), On Battery, On Bypass, Alarm and Low battery. The contacts are change over or normally open.

MultiCom 382

CHARACTERISTICS

- Max. 3A current at 250Vac
- Signal contact customisation

Multi I/O - Protocol converter

Multi I/O has configurable input and output signal contacts to allow UPS integration with control systems. It can be used to connect two devices to a single UPS serial communication port. It can also communicate using the MODBUS/JBUS protocol on RS485 lines.

Multi I/O, slot version

Multi I/O, box version

CHARACTERISTICS

- 8 analog/digital inputs
- 8 relay outputs to monitor UPS and mains status
- It can control two independent RS232/RS485 serial lines to monitor the UPS and its operating states using the MODBUS/JBUS protocol
- Firmware upgradeable through the serial port

USB Converter - USB serial converter

The RS232-USB converter allows UPS without a USB port to connect to Macintosh, Windows and Linux PCs with this type of port.

USB Converter

CHARACTERISTICS

- Compatible with USB 1or 2
- Compatible with Watch&Save 3000

Software and accessories for total reliability in controls and communication

Multifunction I/O - Serial link / contacts duplexer

Multifunction I/O is a Sentinel 6 range accessory with which you can associate the battery operation, by-pass, alarm and battery depleted status reports with dry contacts (maximum current 8A/250V). The accessory also has an input which is used to set up the configurable remote on, remote off and remote on/off functions through the UPSTools software (vers. 1.3.3 or higher). The functions are provided for UPS with firmware version SWM020-01-16 or higher.

Multifunction I/O

CHARACTERISTICS

- Max. current 8A at 250Vac
- Possibility of configuring the signal-to-contact associations
- Pass-through serial link for PC connection

MultiCom 401 - PROFIBUS

The MultiCom 401 is an accessory with which you can connect a UPS to a Profibus DP network. With this device management and monitoring of the UPS can be integrated in a control system based on one of the field buses most widely used in industry for communication between control/automation systems and distributed I/O.

MultiCom 401

CHARACTERISTICS

- PROFIBUS DP-V1 Protocol
- Configurable address from 0 to 99
- Profidrive V2 PP05
- Configurable baud rate from 9.6 kBit/s to 12 MBit/s
- Led reporting the communication flow

KIT for AS400 and i-Series - Communication Kit

The IBM AS/400 has a single-level memory management feature that makes it compulsory for the system to be shutdown in a controlled and orderly manner. Without UPS protection an AS/400 is not protected from mains failures.
A momentary loss of power can cause hardware damage, data corruption and a lengthy reboot period. The AROS AS/400 interface kit allows a UPS to be connected to the AS/400 to initiate an orderly system shutdown on mains failure.

CHARACTERISTICS

- Compatible with all AS/400 systems
- Supports all the AROS UPS ranges

Software and accessories for total reliability in controls and communication

Graphic Remote Panel

Graphic Remote Panel is a remote monitoring device that can provide a detailed UPS status overview in real time. It is compatible with all Aros UPS with RS232 and can display values for UPS specific input and output supplies, and battery set measurements. Graphic Remote Panel has a high-definition graphical display and can report in 7 languages: English, Italian, German, French, Spanish, Russian and Chinese. It has 3 independent serial ports, one of which allows for UPS monitoring via the MODBUS/JBUS protocol (on either an RS485 or RS232 serial line). The others can be used with devices such as the Netman 101 Plus or a PC running Watch&Save 3000 software.

Graphic Remote Panel

CHARACTERISTICS

- Graphical high definition LCD panel
- Three independent serial connections
- Compatible with most BMS management programs
- Communications flow LED status indicator
- Serial port upgradeable firmware

Bypass Accessories

External Manual Bypass 16A – Manual Bypass

The manual bypass is a maintenance bypass to allow a UPS to be powered down and removed for service without disruption to the connected load(s). The manual bypass has both manual and automatic transfer functions. If the UPS is accidentally disconnected or fails any load(s) connected to it are automatically transferred to the mains supply. The manual bypass is available in wall mounted or 19" rack mount formats.

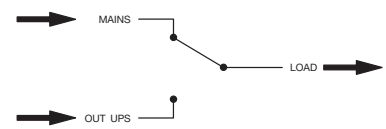
External Manual Bypass 16A
wall mount version

CHARACTERISTICS

- Wall or rack mount versions
- Back-feed protection
- Manual and automatic transfer functions
- Mains power present LED indicator
- IEC, UK, Schuko and hard wired connected options

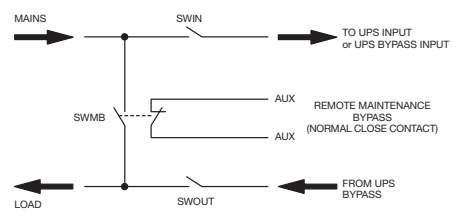
MBB10A - MBB16A - MBB32A – Maintenance Bypass

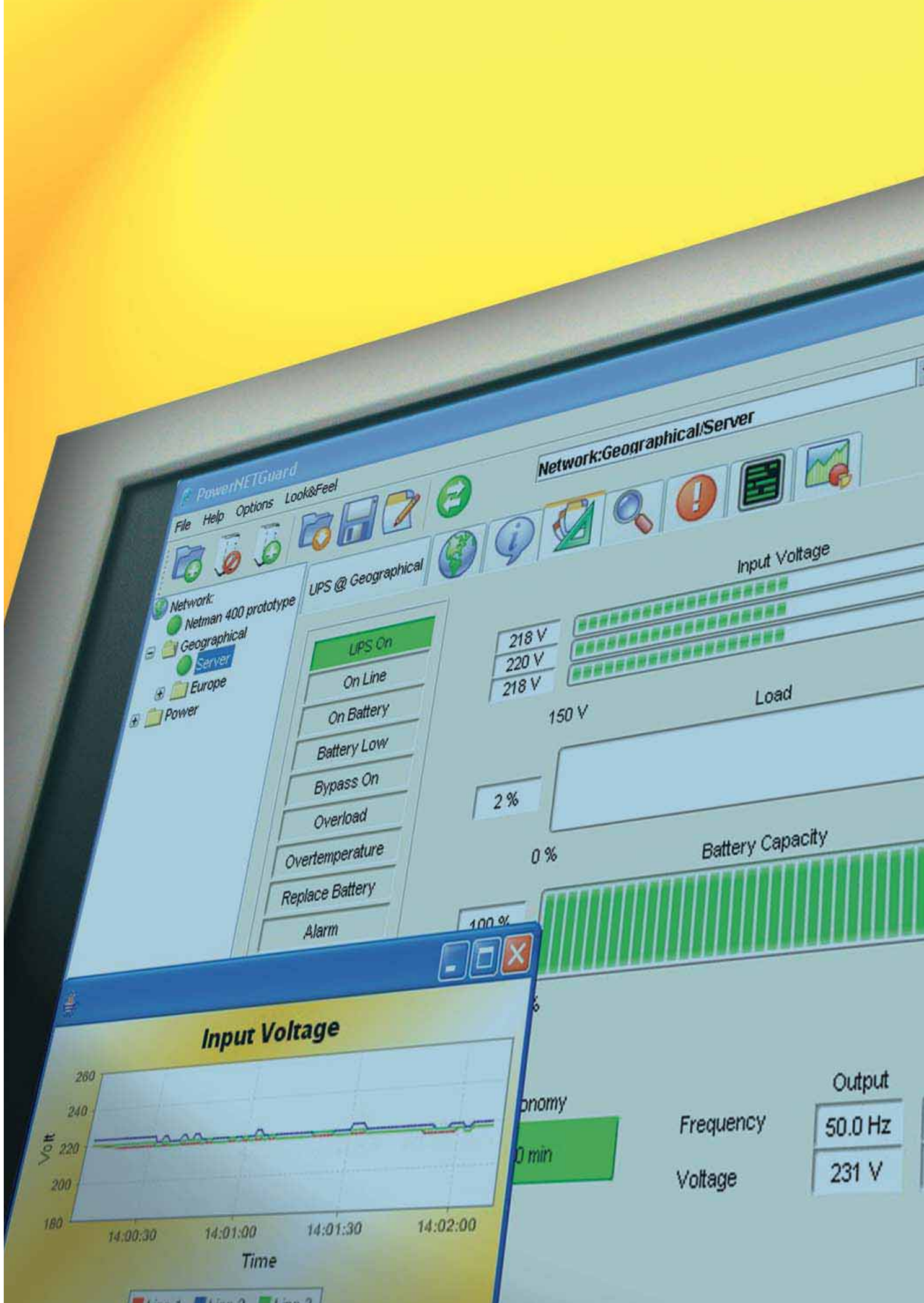
This is available in 10, 16 and 32 Amp models, and allows a UPS unit up to 6kVA to be safely powered down for maintenance/removal, without any disruption in the power supplied to the load. Both versions are supplied with a wall mount metal bracket.



MBB100A – Maintenance Bypass

Available only in one version which allows manual bypass operations on any 10 to 20kVA single phase UPS and 10 to 40kVA three phase UPS. The device comes with three circuit breakers as shown in the attached diagram, so as to ensure complete isolation of the UPS during maintenance or removal operations, whilst guaranteeing continuous power supply to the loads. The device has a microswitch for connection to the appropriate UPS input, which signals closure of the manual bypass, in order to prevent energy being supplied simultaneously from the manual bypass and the inverter.




PowerNETGuard
File Help Options Look&Feel
Network:Geographical/Server
UPS @ Geographical
Network:
Netman 400 prototype
Geographical
Server
Europe
Power
UPS On
On Line
On Battery
Battery Low
Bypass On
Overload
Overtemperature
Replace Battery
Alarm
Input Voltage
218 V
220 V
218 V
150 V
Load
2 %
0 %
Battery Capacity
Output
Frequency
50.0 Hz
Voltage
231 V
Input Voltage
260
240
220
200
180
Volt
14:00:30
14:01:00
14:01:30
14:02:00
Time

CSS Configurations
Standby Power Systems

AROS uninterruptible power supplies are also designed and built for use in applications such as central supply systems for emergency lighting, security alarms and electro-medical equipment.
The CEI 64-8 V2, EN 50171 standards and other guidelines set down the characteristics and performance levels required from such systems. The main ones are summarized below:

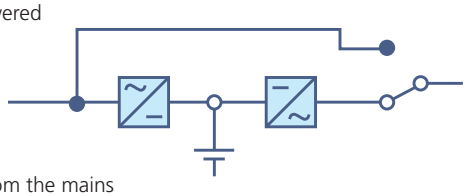
- Up to 3 h back-up times
- Battery recharge time of under 12 h
- Galvanically isolated input/output
- High-level diagnostics – preferably from a front mimic panel
- Remote interface – normally volt-free contacts
- High short circuit current capability.

The applications require a continuous power system configured as follows:

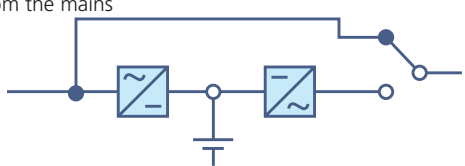
- A standard UPS with high capacity battery charger
- An isolation transformer (option)
- A remote interface to communicate with other peripherals.

Diagrams of the various system solutions

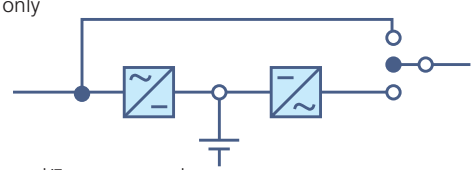
1. Always powered



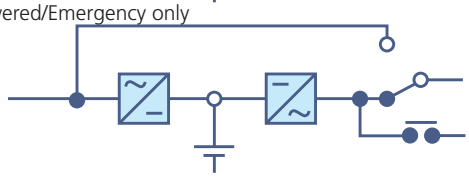
2. Powered from the mains



3. Emergency only



4. Always powered/Emergency only



EXAMPLE OF CSS CONFIGURATIONS

Model	Powers loads of power up to
Back-up times of up to 3 hours	
SENTINEL 6	1600 W
SENTINEL XR	2000 W
SENTRY MULTISTANDARD	30.000 W

Model	Powers loads of power up to
Back-up times of up to 1 hours	
SENTINEL 6	2100 W
SENTINEL XR	3500 W
SENTRY MULTISTANDARD	64.000 W

CHARACTERISTICS

- Full microprocessor control: for greater reliability and compactness in size
- Use of Isolated Gate Bipolar Transistors (IGBT) technology – used in UPS for over 10 years to optimise performance (such as overloads) and reduce physical sizes
- Advanced communication interface – the units come with a volt-free contact interface and RS232/485 serial interface for communication with a local PC or computer network
- PowerNetGuard remote support service compatible for remote diagnostics and control
- Front panel LCD to display operating status, alarms, measurements and logs
- Option to expand the power and/or reliability through the parallel connection of units – 8kVA models and higher

ADVANCED COMMUNICATION

- Advanced, multi-platform communication for all operating systems and network environments: Watch&save 3000 monitoring and shut-down software included, for Windws 2008, Vista, 2003, XP; Mac OS X, Linux, Novell and most popular Unix operating systems.

A FULL RANGE OF CSS UNITS, FROM 700VA TO 200KVA.

The CSS range units are comprised of the following blocks:

Rectifier: converts the alternating voltage input from the mains power supply or from an alternative source (generator) into direct current voltage.

Inverter: converts the direct current voltage supplied by the rectifier into alternating voltage. In this way the voltage is reconstructed, filtered and stabilised with regard to the input voltage.

By-pass: this allows switching between the inverter and the mains power supply. In "always powered" operating mode the CSS load is always powered from the inverter and is only switched onto the mains via the by-pass circuit in the event of a failure. In "powered from the mains" mode, the load is powered and only switched onto the inverter when there is no power from the mains. In "emergency only" mode the load is only powered from the inverter in the event of a mains power failure. To deal with the current surges required by the powered loads at switching-on time, a Soft Start inverter has been implemented in order to limit the value of current required. In "always powered/emergency only" two outputs can be used: one always powered (such as for powering computer loads) and one that is only powered when there is no power from the mains (such as for powering emergency lights that by law must switch on within a maximum time of 0.5 seconds from a mains failure).

Batteries: used to feed the inverter output for the legally required time of 3 hours (if there is no generator). The batteries used are generally valve-regulated, lead-acid type, and do not require maintenance or a special installation room as they have very low gas emissions.

Compliance with Legislation

The CSS configurations complies with the relevant European regulations (and national guidelines still in force in some countries) governing such applications.

OPTIONS

- Communication interfaces: see options table for individual models
- Isolation transformers
- Second outlet emergency only

Input
Load 1
Load 2
AVS
AUTOMATIC VOLTAGE REGULATOR

Stabilisers

WHY USE STABILISERS?

Proper operation of most electric and electronic equipment depends to a large extent on the power supply voltage that must be kept as steady and as near to the nominal value as possible. In many installations, the mains power supply tends to fluctuate for a number of reasons. So devices that overcome and correct this problem are often used and the ideal solution is a stabiliser. AROS produces a full range of electromechanical and electronic stabilisers as well as electronic line conditioners.

ELECTROMECHANICAL STABILISERS

This type of stabiliser controls the voltage output by adding or removing (by moving a brush converter) voltage so as to restore output to the nominal value. Advantages of using an electromechanical stabiliser are:

- High quality voltage
- Insensitive to the type of load or power factor
- Low weight/power ratio
- High stabilizing accuracy
- High reliability
- Wide range of power ratings for single-phase or three-phase voltages.

ELECTRONIC STABILISERS

The operating principle of an electronic stabiliser is based on the regulation of the voltage through self-transformer sockets selected and connected to the output via static switches.
Regulation is determined by a specific electronic control circuit.
Advantages of using an electronic stabiliser are:

- No harmonic distortion
- Insensitive to the type of load or power factor
- Low weight/power ratio
- High reliability
- High voltage regulation speed.

ELECTRONIC LINE CONDITIONERS

An electronic line conditioner combines an electronic stabiliser, an isolating transformer and high attenuation EMI/RFI filters in a single unit.
It provides maximum protection for installations susceptible to voltage fluctuations, high frequency line noise and power surges. Advantages of the line conditioners are:

- Isolation between the line and the load
- No harmonic distortion
- Insensitive to the type of load or power factor
- High voltage regulation speed
- Protection against power surges
- Protection against line noise.

Voltronic 4 single-phase

The VOLTRONIC 4 single-phase electronic voltage stabiliser is able to adjust the output voltage within ±3% of the rated voltage.
The main features of the VOLTRONIC 4 electronic voltage stabilisers are:

- Microprocessor full control
- Compact size
- High regulation speed
- High efficiency
- Insensitivity to load variations and power factor.

A LED panel provides information on:

- Mains input voltage exceeding regulation limits
- Mains frequency exceeding limit
- Load level
- Overload
- Alarm for input overvoltage and/or overheating (the visual alarm is accompanied by an acoustic alarm).

Voltronic 4 single-phase

Technical data

	V4-500	V4-1000	V4-2000	V4-4000	V4-5000	V4-10000
Nominal output voltage	220-230-240 Vac single-phase					
Input voltage range	-18% +14% depending on the selected output voltage					
Frequency	48 -62 Hz					
Power (kVA)	0,5	1	2	4	5	10
Maximum output current at 230V (A)	2,4	4,5	9	18	22	44
Efficiency	98%					
Accuracy	±3%					
Regulation speed (ms/V)	2					
Accepted load variation	0 to 100%					
Load power factor	Any					
Overload	1,5 I_N x 5 sec					
Harmonic distortion	<0,5%					
Cooling	Natural				Forced ventilation	
Operating ambient temperature	0°C ÷ 40°C					
Protection degree	IP 20					
Display indications	Mains OK, load level, overload, alarms					
Acoustic alarm	Active for overload, over-voltage, over-temperature					
Input protection	Fuse		Automatic switch			
Output protection	Fuse		Fuse			
Input connection	Cable with Schuko plug		Internal terminal board			
Output connection	Schuko socket		Internal terminal board			

	V4-500	V4-1000	V4-2000	V4-4000	V4-5000	V4-10000
Dimensions (wdh) mm	180x215x194		230x350x275			340x540x310
Weight (kg)	9	10	21	25	27	51

Voltronic 4 three-phase

The VOLTRONIC 4 three-phase electronic voltage stabiliser is able to adjust the output voltage within ±3% of the rated voltage.
Voltage stabilisation is performed independently on each phase.
The main features of the VOLTRONIC 4 three-phase electronic voltage stabilisers are:

- Microprocessor full control
- Compact size
- High regulation speed
- High efficiency
- Insensitivity to load variations and power factor.

A LED panel provides information on:

- Mains input voltage exceeding regulation limits
- Mains frequency exceeding limit
- Load level
- Overload
- Alarm for input overvoltage and/or overheating (the visual alarm is accompanied by an acoustic alarm).

Voltronic 4 three-phase

Technical data

	V4 3F-6000	V4 3F-10000	V4 3F-12000	V4 3F-15000
Nominal output voltage	380/400/415 Vac + N selectable			
Input voltage range	-18% +14% depending on the selected output voltage			
Frequency	48 - 62 Hz			
Power (kVA)	6	10	12	15
Maximum output current at 230V (A)	9	15	18	22
Efficiency	98%			
Accuracy	±3%			
Regulation	Independent on each phase			
Regulation speed (ms/V)	2			
Overload	1,5 I_N x 5 sec			
Accepted load variation	0 to 100%			
Load power factor	Any			
Harmonic distortion	<0,5%			
Cooling	Natural		Forced ventilation	
Operating ambient temperature	0°C ÷ 40°C			
Protection degree	IP 20			
Display indications	Mains OK, load level, overload, alarms			
Acoustic alarm	Active for overload, over temperature, irrecoverable failure			
Input protection	Automatic switch			
Output protection	Fuse on each phase			
Input connection	Internal terminal board			
Output connection	Internal terminal board			

	V4 3F-6000	V4 3F-10000	V4 3F-12000	V4 3F-15000
Dimensions (wdh) (mm)	340x540x310			
Weight (kg)	44	48	52	60

ELC Line Conditioners

The electronic line conditioners of the ELC range have been specially designed to protect electronic control equipment such as PC's, PLC's, internet devices, laboratory instrumentation, data transmission and audio-video apparatus, against anomalies or interference in the power supply circuit. In particular, ELC protect against line noise and power surges ensuring effective voltage regulation.
The electronic line conditioners guarantee and effective protection as they combine an electronic stabilizer, EMI/RFI filters and an isolating transformer in a single unit.
The equipment is controlled by a microprocessor logic that also sounds alarms in the event of overloads, overvoltage or overheating.

ELC Line Conditioners

Technical data

	ELC 1500	ELC 3000	ELC 5000
Nominal input voltage	220/230/240 Vac single-phase		
Nominal output voltage	220/230/240 Vac selectable, single-phase		
Input voltage range	-18% +14% depending on the selected output voltage		
Input frequency	48 - 62 Hz		
Power (kVA)	1,5	3	5
Max. output current at 230V (A)	7	14	22
Efficiency	95%		
Accuracy	±3%		
Regulation speed (ms/Volt)	2		
Overload	1,5 I_N x 5 sec		
Accepted load variation	0 to 100%		
Load power factor	Any		
Harmonic distortion	<0,5%		
Input peak voltage protection	Up to 4KV - 130 Joule		
Common mode rejection ratio	70 dB		
Primary and secondary insulation voltage	2500V input/output		
Cooling	Natural		Forced ventilation
Operating ambient temperature	0°C ÷ 40°C		
Protection degree	IP 20		
Display indications	Line OK, load level, overload, alarms		
Acoustic alarm	Active for overload, overvoltage, overtemperature		
Input protection	Automatic switch		
Output protection	Fuses		
Input connection	Internal terminal board		
Output connection	Internal terminal board		

	ELC 1500	ELC 3000	ELC 5000
Dimensions (wdh) (mm)	230x350x275	340x540x310	
Weight (kg)	26	44	56

RQ

The RQ stabilizers belong to the electromechanical series with electronic control. They provide a perfect constant single-phase output voltage completely independent from any variation of the input voltage within the accepted voltage range.
The stabilisation of the output voltage is not affected neither by eventual harmonic distortion present in the mains nor by the value and load power factor; the output power distortion is very low (<0,2%) and the total efficiency is very high. The installation of the RQ stabilizers is very flexible: their special shape makes it easy to install them near the equipment to power or inside it. They can be mounted on the wall or in a cabinet.

Technical data

	RQ 1000	RQ 2500	RQ 5000	RQ 7000
Power (kVA)	1	2,5 / 2	5 / 4	7 / 5,5
Input voltage range	±25%	±15/20%	±15/20%	±15/20%
Maximum output current (A)	4	11	22	31
Regulation speed (ms/Volt)	18	16	16	16
Efficiency	94%	96%	97%	98%

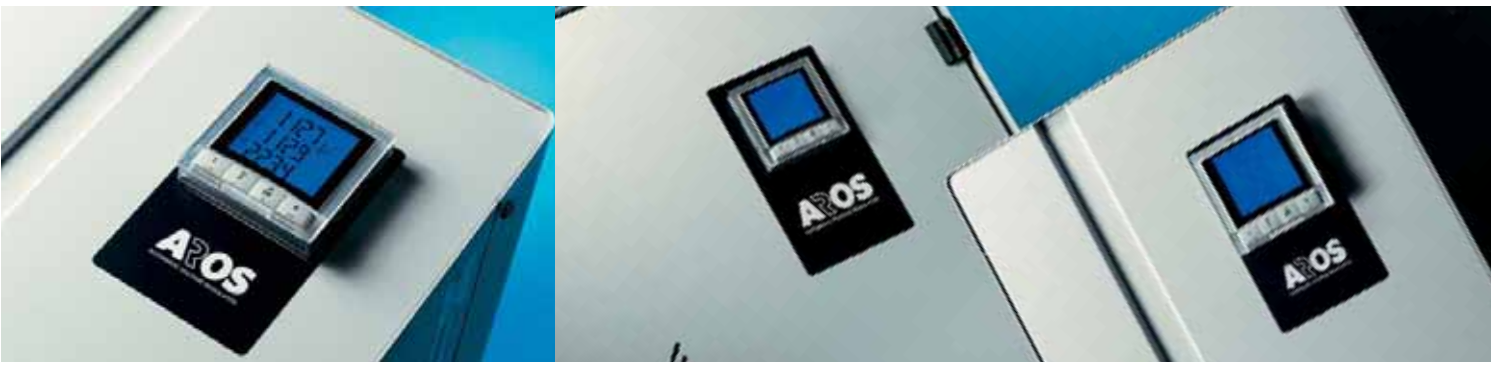
	RQ K10	RQ K15	RQ K25	RQ K35
Power (kVA)	10 / 7	15 / 10	25 / 20	35 / 25
Input voltage range	±15/20%	±15/20%	±15/20%	±15/20%
Maximum output current (A)	44	65	109	152
Regulation speed (ms/Volt)	16	16	18	18
Efficiency	96%	98%	98%	98%

Common characteristics	
Nominal input/output voltage	230 Vac
Accuracy	±1%
Nominal frequency	50/60 Hz
Load variation	0 to 100%
Load power factor	Any
Harmonic distortion	<0,2%
Cooling	Natural
Operating ambient temperature	-5°C ÷ 40°C
Protection degree	IP 21

	RQ 1000	RQ 2500	RQ 5000	RQ 7000
Dimensions (wdh) (mm)	275x425x260	275x425x260	275x425x260	300x565x280
Weight (kg)	23	23	28	41

	RQ K10	RQ K15	RQ K25	RQ K35
Dimensions (wdh) (mm)	300x565x280	300x565x280	405x670x1150	405x670x1150
Weight (kg)	47	55	140	150

Tristab-T



TRISTAB-T series includes several voltage stabilizers of electromechanical type with electronic control. They provide a perfect three-phase output voltage completely independent from any variation of the input voltage within the accepted voltage range. The stabilisation of the output voltage is not affected neither by eventual harmonic distortion present in the mains nor by the value and the load power factor; the distortion of the output voltage is very low (<0,2%); the total efficiency is very high. The voltage regulation is provided on the average value of three-phases and then these stabilizers are suitable for maximum 50% unbalanced load. There is the possibility of choosing between two input voltage ranges according to the nominal power required (see table).
The operator panel includes a digital voltmeter which inform on the status of the line downstream on the voltage of each phase and the linked voltages.
All models (up to 60kVA) are provided with wheels for an easier positioning and handling.

Technical data

	T5	T10	T15	T20	T30	T50	T60
Power (kVA) with input ±15%	5	10	15	20	30	50	60
Power (kVA) with input ±20%	4	7	10	15	20	36	45
Input voltage range	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%
Maximum output current (A)	7	14	21	28	43	71	87
Regulation speed (ms/Volt)	18/13	18/13	18/13	18/13	18/13	18/13	18/13
Efficiency	95%	96%	97%	98%	98%	98%	98%

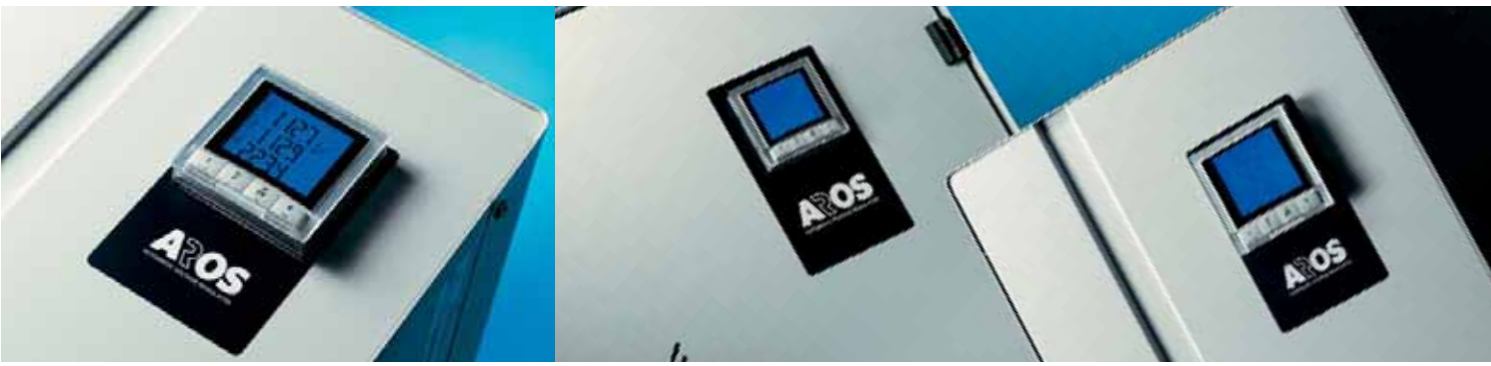
	T75	T105	T135	T175	T230	T300	
Power (kVA) with input ±15%	75	105	135	175	230	300	
Power (kVA) with input ±20%	60	75	105	135	175	230	
Input voltage range	±15/20%	±15/20%	±15/20%	±15/20	±15/20%	±15/20%	
Maximum output current (A)	108	152	195	253	332	433	
Regulation speed (ms/Volt)	18/13	18/13	18/13	18/13	20/18	20/18	
Efficiency	98%	98%	98%	98%	98%	98%	

Common characteristics	
Nominal input/output voltage	400 Vac
Accuracy	±1%
Nominal frequency	50/60 Hz
Load variation	0 to 100%
Load power factor	Any
Harmonic distortion	<0,2%
Cooling	Forced ventilation
Operating ambient temperature	-5°C ÷ 40°C
Protection degree	IP 21

	T5	T10	T15	T20	T30	T50	T60
Dimensions (wdh) (mm)		360x520x1000			405x670x1150		605x850x1450
Weight (kg)	82	85	110	145	170	190	320

	T75	T105	T135	T175	T230	T300	
Dimensions (wdh) (mm)	605x850x1450		605x850x1650		1210x850x1650		
Weight (kg)	380	460	510	850	930	760	

Tristab-Y



TRISTAB-Y series includes several voltage stabilizers of electromechanical type with electronic control from 5 to 300kVA. They provide a perfect three-phase output voltage completely independent from any input voltage variation within the accepted voltage range.
The stabilisation of the output voltage is not affected neither by eventual harmonic distortion
present in the mains nor by the value and load power factor; the output voltage distortion is very low (<0,2%); the total efficiency is very high. In the "Y" version the stabilising effect is obtained independently on each phase. This solution is therefore particularly useful with unbalanced three-phase loads or single-phase loads.
For proper operation, the presence of the neutral wire is necessary. There is the possibility of choosing between two input voltage ranges according to the nominal power required (see table).
The operator panel includes a digital voltmeter which provides information on the voltage of each phase and the linked voltages. All models (up to 60kVA) are provided with wheels for an easier positioning and handling.

Technical data

	Y5	Y10	Y15	Y20	Y30	Y50	Y60
Power (kVA) with input ±15%	5	10	15	20	30	50	60
Power (kVA) with input ±20%	4	7	10	15	20	36	45
Input voltage range	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%
Maximum output current (A)	7	14	21	28	43	71	87
Regulation speed (ms/Volt)	16/12	16/12	16/12	16/12	16/12	16/12	18/14
Efficiency	95%	96%	97%	98%	98%	98%	98%

	Y75	Y105	Y135	Y175	Y230	Y300	
Power (kVA) with input ±15%	75	105	135	175	230	300	
Power (kVA) with input ±20%	60	75	105	135	175	230	
Input voltage range	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%	±15/20%	
Maximum output current (A)	108	152	195	253	332	433	
Regulation speed (ms/Volt)	18/14	18/14	18/14	18/14	18/14	18/14	
Efficiency	98%	98%	98%	98%	98%	98%	

Common characteristics	
Nominal input/output voltage	400 Vac
Accuracy	±1%
Nominal frequency	50/60 Hz
Load variation	0 to 100%
Load power factor	Any
Harmonic distortion	<0,2%
Cooling	Forced ventilation
Operating ambient temperature	-5°C ÷ 40°C
Protection degree	IP 21

	Y5	Y10	Y15	Y20	Y30	Y50	Y60
Dimensions (wdh) (mm)		360x520x1000			405x670x1150		605x850x1450
Weight (kg)	90	90	110	155	180	200	380

	Y75	Y105	Y135	Y175	Y230	Y300	
Dimensions (wdh) (mm)	605x850x1445		605x850x1650		1210x850x1650		
Weight (kg)	430	490	580	950	1030	860	

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